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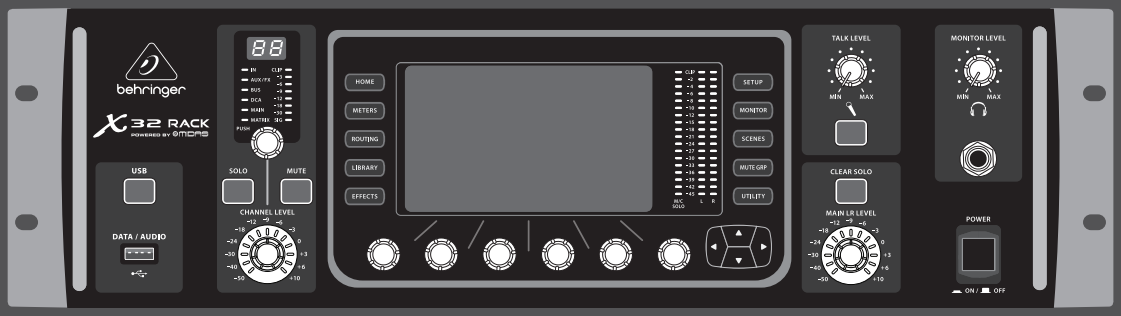

User Manual

X32 RACK DIGITAL MIXER

40-Input, 25-Bus Digital Rack Mixer with 16 Programmable MIDAS Preamps, USB Audio Interface and iPad/iPhone Remote Control

behringer

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EN Important Safety Instructions

Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

Caution
To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

Caution
To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Caution
These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this apparatus near water.

6. Clean only with dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Use only attachments/accessories specified by the manufacturer.

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

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LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding MUSIC Group's Limited Warranty, please see complete details online at www.music-group.com/warranty.

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Introduction

Welcome to the X32 RACK User Manual! After years of intense development, we are proud to offer a mixer that combines tremendous power and flexibility with a very user-friendly layout and intuitive workflow that allow you to get up-and-running right away.

The X32 RACK is a robust-yet-streamlined mixer that features all of the core functionality and processing of BEHRINGER's flagship X32 console in a smaller form factor. Employing motorized faders and rotary encoders along with a daylight-viewable TFT screen, the control surface is designed to allow immediate access to critical functions with total and automatic recall of settings. Extensive on-board I/O includes Cirrus Logic converters, 96 bidirectional channels over SuperMAC AES50, 16 channels of BEHRINGER's Ultranet personal monitoring and 32 x 32 channels for recording over USB.

Abundant analog connectivity is provided via 16 MIDAS-designed digitally-controllable microphone preamps, 6 line-level auxiliary in- and outputs, 8 XLR outputs, stereo TRS monitoring outputs and headphones output. Each of the 16 microphone inputs can accept balanced or unbalanced mic or line-level level signals and include switchable phantom power, 72 dB gain range and max +23 dBu level before clip. A separate external talkback mic input allows communication to various destinations.

Dual AES50 Ethernet jacks that employ KLARK TEKNIK SuperMAC technology contribute 96 x 96 signals to the total count of 168 x 168 accessible sources and destinations. Motorized faders, recallable mic preamps, programmable routing and the ability to save and recall entire scenes make set or program changes quick and simple. A top panel USB connector enables system data to be stored or a board mix to be recorded directly to external flash or hard drives.

The Input section is home for 8 high-resolution 100 mm motorized faders, providing control over channels 1-16, 17-32 (from AES50), Aux inputs / USB playback / FX returns, and Bus Masters. A separate section of 8 motorized faders controls DCA groups 1-8, bus 1-8 and 9-16 as well as matrices 1-6. The master "X-channel" section allows instant editing of the currently selected channel's gain, dynamics, EQ and other functions. A custom assignable section allows certain control functions to be mapped directly to a set of dedicated buttons.

A main 5"-wide, high-contrast color display provides information for editing pertinent parameters of the active function or effect. Relevant parameters are quickly recalled to the display for editing via "view" buttons in each sub-section.

A virtual FX rack offers 8 true-stereo (16 mono) multi-effects processors, with 39 FX models that eliminate the need for any additional outboard gear. 4 high-quality effects such as delay, chorus and reverb can run concurrently with 8 channels of 31-band graphic equalization.

The built-in interface card enables streaming of up to 32 tracks to and from a computer for recording, mixing and mastering purposes.

The X32 RACK integrates seamlessly with other X32 consoles, the S16 digital stage box and the P-16 personal monitoring system for complete live, studio and installed sound solutions. Control the mixer from a distance with the free iPad app or with editing and remote control software connected via Ethernet. The X32 RACK's ease of use, intuitive workflow, diverse feature set and integration with other equipment make it an ideal centerpiece for installed and production sound in any setting.

Continue through this User Manual to learn all about the functionality that this powerful mixer has to offer! We also recommend that you check behringer.com to make sure you have the latest firmware installed as we release frequent updates.

1. Operational Overview

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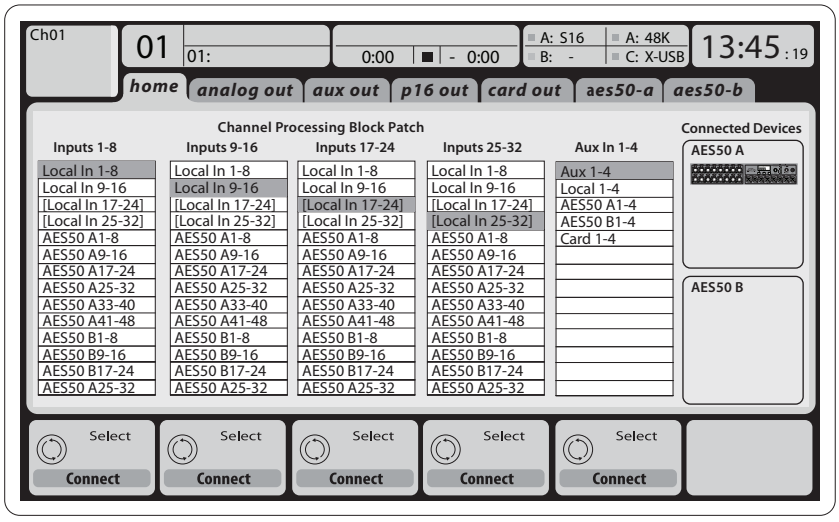


Routing I/O

The X32 RACK console features 16 analog rear-panel XLR inputs with microphone preamps, as well as 8 rear-panel XLR Outputs and 6 TRS Aux Sends and Returns. In addition, there are two AES50 ports, each featuring 48 input and output channels, and a card slot for 32 channels of input and output to and from a connected computer via USB 2.0.

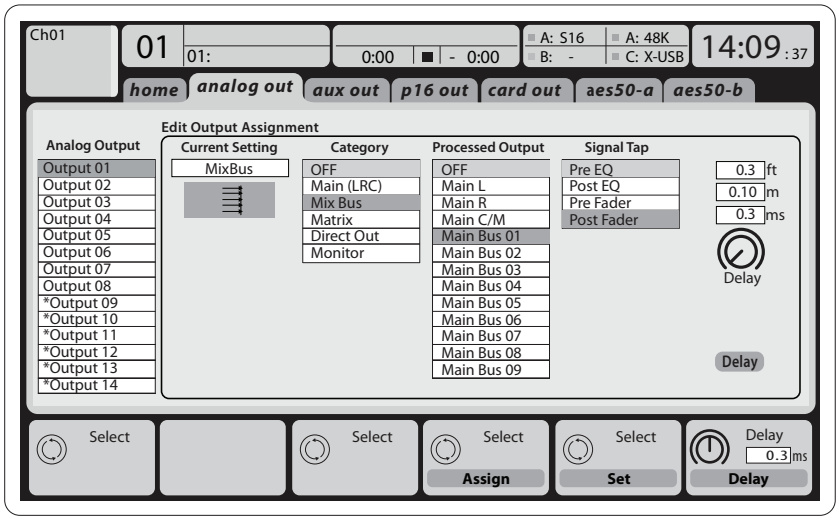
Input Signals can be attached to the console's internal audio processing engine in blocks of 8 signals from any one of the aforementioned input sources.

Note: All signal blocks patched to the audio processing will be connected to the corresponding input channels automatically.

Local inputs 17-24 and 25-32 are listed with brackets, indicating that these are not physically available on this device. Assigning these will obviously carry no signal, but they can still be used when preparing shows for a full X32 console.

Cabling for AES50 connections between X32 and S16 stageboxes:

- Shielded Cat-5e cables only
- Ethercon terminated cable ends
- Maximum cable length 100 meters (300 feet)



Output Signals can be freely assigned from any internal signal to any of the following outputs:

- 8 analog local XLR outputs (with adjustable digital delay for time-alignment of speakers)
- 8 virtual outputs (marked with *) for routing over AES50 or card outputs
- 6 auxiliary sends on ¼" TRS outputs
- 16 channel personal monitoring using the console's P-16 Bus output connector

Any and all of the above signals can also be mirrored in blocks of 8 signals on either one of

- 48x channels on AES50 port A
- 48x channels on AES50 port B
- 32x channels on USB interface card

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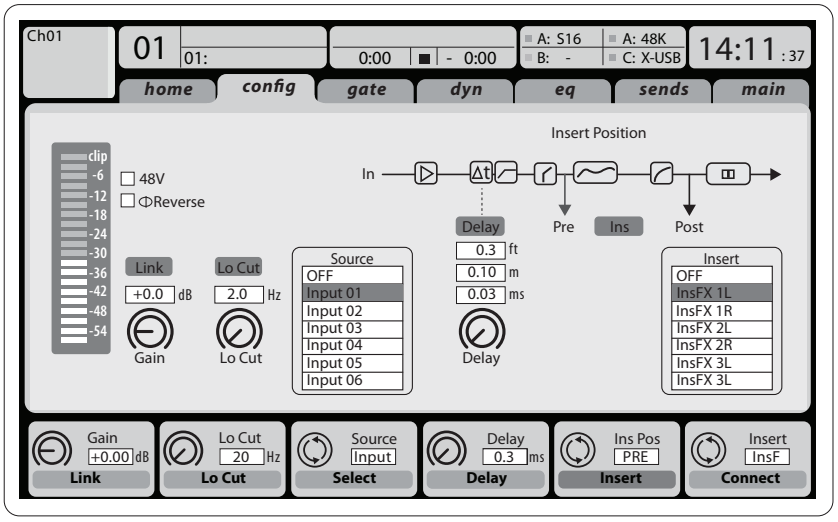
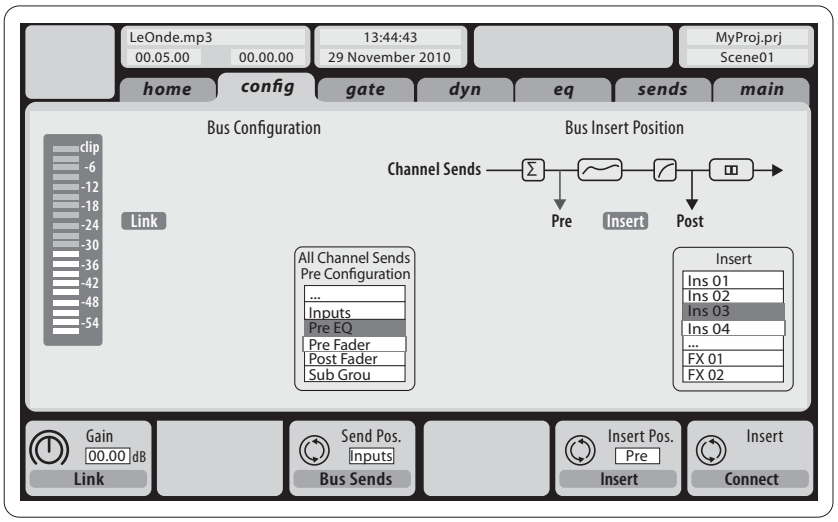


Input Channels 1-16 are pre-configured to use the local input signals 1-16, but can be patched to use any other available signal on the audio engine as well, including mix bus/sub group outputs. Changes of the Channel Source can be made on the Preamp Config page.

Input Channels 17-32 are pre-configured to AES50 A inputs 1-16, so that connecting an S16 stage box to port A will automatically feed the channels.

Aux Return Channels 1-8 are pre-configured to use the 6 aux input signals, and the two USB playback outputs, but can be patched to use any other available signal of the console as well.

FX Return Channels 1L-4R control the 4 stereo output signals of side-chain FX1-4.



The configuration of **Mix Bus Channels 1-16** can be pre-set (in the Setup/Global page) or can also be configured on an individual, per-channel basis. The bus processing includes (in this order):

- Insert point (swappable between post-EQ and pre-EQ operation)
- 6-band fully parametric EQ
- Compressor/expander (swappable between post-EQ and pre-EQ operation)
- Bus sends to 6 matrices
- Main LR panning
- Mono/Center level

Main Bus Channels LR/C are always available and independent from Mix Buses. The processing steps for this signal path include (in this order):

- Insert point (swappable between post-EQ and pre-EQ operation)
- 6-band fully parametric EQ
- Compressor/expander (swappable between post-EQ and pre-EQ operation)
- Bus sends to 6 matrices

Matrix Channels 1-6 are fed exclusively by MAIN LRC and Mix Bus 1-16 signals. The processing steps include (in this order):

- Insert point (swappable between post-EQ and pre-EQ operation)
- 6-band fully parametric EQ
- Compressor/expander (swappable between post-EQ and pre-EQ operation)

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Effects Processing 1-8

The X32 RACK contains eight true-stereo internal effects engines.

- FX 1-4 can be configured as side chain or insert effects, while FX 5-8 can only be used in insert points of channels or buses
- The FX Home screen allows selection of the FX 1-4 input sources and selecting the effects type/algorithm for each of the 8 FX slots of the virtual rack
- The subsequent tabs FX 1-FX 8 of the FX screen allow editing all parameters of the chosen effects processor

iPad App for X32 RACK

Many functions of the X32 RACK console can be remotely controlled by a dedicated iPad app. Details about the app's download, setup and operation are included in a separate user manual available for download from the X32 RACK product page.

The app's User Interface is optimized for the touchscreen nature of the iPad device and concentrates on the most important remote features of the console only. Using the app, you can perform functions such as adjusting monitor mixes from the stage while interacting with musicians, or adjusting the front-of-house mix from the audience, while hearing the mix exactly as the audience does.

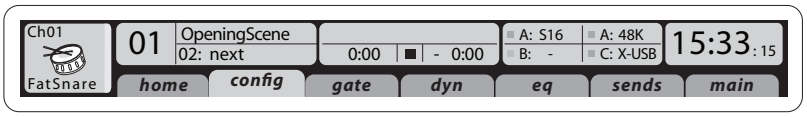
Linux/OS X applications and Windows-based applications for X32 RACK

Also offered is a separate remote editor running on host computers that will allow for complete editing control of the X32 RACK via Ethernet. Details of the remote editor's download, setup and operation are included in a separate user manual available for download from the X32 RACK product page. Check out behringer.com for more information.

Tip: The X32 RACK remote communication is OSC-based (open sound control) and we will share the protocol on our website, allowing developers to design their own control software. Stay tuned to behringer.com for details on the OSC protocol.

X-USB expansion card

The X-USB card allows transmission of up to 32 channels to and from a connected computer. Please download the X-USB drivers and Quick Start Guide from behringer.com before connecting the mixer to your computer. The card is CoreAudio compatible, allowing it to work with computers with the OS X operating system software of Apple, Inc. without a driver.



Main Display Area

The top section of the main display permanently covers useful status information. The top left corner shows the selected channel number, its nickname and the selected icon. The next block shows the current scene number and name in amber, as well as the next upcoming scene. The center section displays the playback file name along with elapsed and remaining time and a recorder status icon. The next block to the right has 4 segments to show the status of AES50 ports A and B, the Card slot and the audio clock synchronization source and sample rate (top right). Small green square indicators show proper connectivity. The right most block shows the console time that can be set under Setup/Config.

When working with any given screen, press the Page keys located on the display bezel to switch to different screen pages.

Editing parameters or settings on each of the screens is done using the 6 associated push-encoders along the bottom edge of the display.

- Whenever there is a continuous control or list entry, you can turn the corresponding knob for editing, which is indicated by various circular icons
- When there is a switch or toggle function on one of these knobs, you will see a broad rectangular button along the lower edge of the field. Pressing the encoder changes the on/off state of the corresponding function. When the rectangular button in the display is dark grey, the corresponding function is off/inactive; when it is amber, the function is on/active

Customizing the X32 RACK through the Utilities page

Press the Utility button, located to the right of the main display, to bring up useful functions in a "context-sensitive" manner. For example:

- When you are adjusting the equalizer of a console channel, pressing the Utility button will offer copying, pasting, loading or saving of equalizer settings
- On the Routing pages, pressing the Utility button will offer loading or saving different presets of routing scenarios
- In the Scenes menu, pressing the Utility button offers copying, loading, saving or naming console scenes

NOTE: The X32 RACK DCA groups can be selected using the Channel Select control in order to adjust their fader level, mute or solo status. Note, however, that the main display will remain focused on the last real channel (bus or input) that was selected before DCA, since DCAs do not feature any processing.

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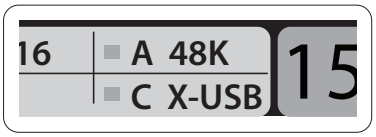
Startup and Shutdown, and Update:

We recommend switching the X32 RACK mixer on first, and shutting it off last when any sound system is connected. This will prevent the possibility of any unexpected noises being transmitted during the startup/shutdown process.

The Setup screen's general preference page contains a Safe Main Levels function. When activated, the console automatically mutes the main LRC levels when booting the console. It also prevents any scene loading from affecting (i.e. turning up) the mains levels.

Synchronization and Sample Rate settings for the console can be adjusted on the Setup/Config page, but please note that sample rate changes will require a reboot of the console. When you see a red square indication at the top section of the main display, please verify if the synchronization settings on Setup/Config make sense.



In order to prevent any errors by losing power during a store operation, we recommend using the "Safe Shutdown" function from the Setup/Global page.

NOTE: The X32 RACK can be locked against unintended use by activating 'Lock Console' from the Setup/Global page. In this state the UI will not allow any changes to be made and the display shows "X". Keep HOME depressed for about 5 seconds to unlock the X32 again.

The X32 firmware can easily be updated by performing the following steps:

- Download the new console firmware from the X32 RACK product page onto the root level of a USB thumb drive
- Plug the USB thumb drive into the front panel USB connector while the console is turned off
- Hold the USB button depressed while switching the console on. While booting, the X32 RACK will run a fully automatic firmware update, which will take 2-3 minutes longer than the regular boot sequence

When no update file is available on the USB drive, or when it is corrupted, the update mode will remain active, preventing the X32 from booting regularly. Switch the console off and back on without holding the USB button to boot the console with the existing firmware.

CAUTION: Please do not block the vent openings on the sides of the X32 RACK cabinet! Specifically when mounting the X32 RACK in a road case, please ensure there is sufficient space to allow for some airflow.

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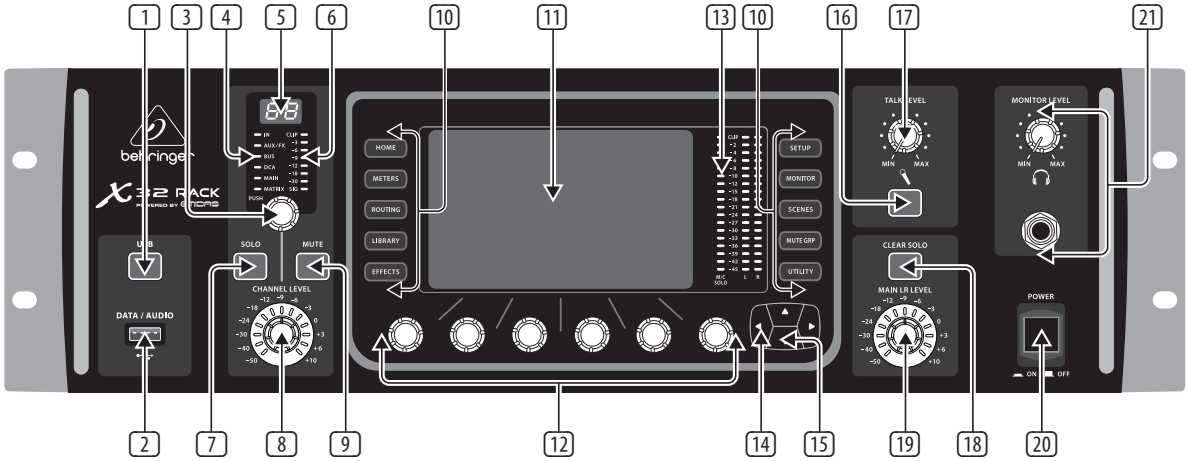
2. Callouts



1 USB button opens the Recorder View on the MAIN DISPLAY, causing the LED to glow green. The LED will glow red to indicate access on the DATA/AUDIO input. An unlit LED indicates no data access and inactive Recorder View.

2 DATA/AUDIO USB input allows connection of USB flashdrives for firmware updates, loading/saving scenes and show files, and playing back or recording WAV files.

3 CHANNEL SELECT control cycles through all channels by turning the knob. By pressing this knob, you can jump to the next type of channels.

4 CHANNEL TYPE LEDs indicate which type of channel is currently selected.

5 CHANNEL NUMBER display shows the currently selected channel.

6 INPUT METER displays the pre-fader input level of the selected channel.

7 SOLO button routes the currently selected channel to the monitoring paths. The LED lights when active.

8 CHANNEL LEVEL control adjusts the currently selected channel's output.

9 MUTE button mutes the currently selected channel. The LED lights when active.

10 MAIN MENU buttons open specific menus on the MAIN DISPLAY.

11 MAIN DISPLAY shows permanent information about the mixer's configuration as well as information about the currently selected menu.

12 DISPLAY ENCODER knobs allow adjustment and on/off selection of the menu items indicated at the bottom of the MAIN DISPLAY.

13 MAIN METER indicates the Main Mono or SOLO level in the left meter and the Main Stereo level on the right.

14 PAGE SELECT buttons curse horizontally in the MAIN DISPLAY and make Yes / No confirmations.

15 LAYER SELECT buttons access different parameter layers that can be edited by the DISPLAY ENCODERS.

16 TALK button engages the Talkback microphone. Routing is defined in the Monitoring Preferences page.

17 TALK LEVEL knob sets the Talkback mic gain.

18 CLEAR SOLO button lights to indicate that one of the channels has been Soloed. Press to deactivate all active solo functions.

19 MAIN LR LEVEL knob adjusts the main stereo output bus.

20 ON/OFF button turns the power on and off.

21 MONITOR LEVEL knob adjusts the headphone and monitor output volume. Connect headphones to the ¼" front panel input.

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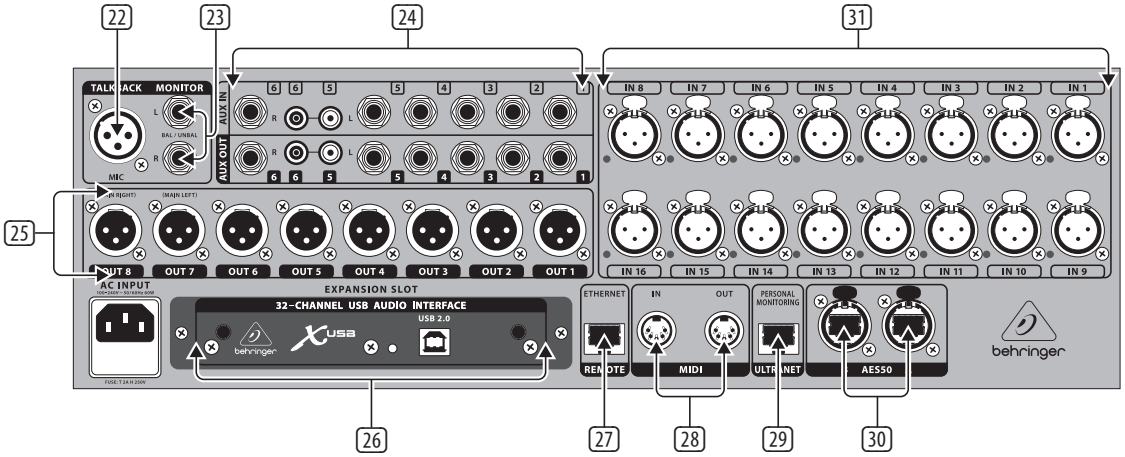

22 TALKBACK input connects a talkback microphone via XLR cable.

23 MONITOR outputs send audio to monitor speakers via ¼" balanced cables.

24 AUX IN and OUT jacks send and receive signals via ¼" and RCA connectors.

25 XLR OUT jacks send audio via XLR cable. Output signals are configured on the Routing/Aux Out page of the MAIN DISPLAY.

26 X-USB card provides 32 channels of input and output via USB cable to and from any connected personal computer DAW application.

27 ETHERNET connector allows full OSC-based remote control of the X32 RACK.

28 MIDI IN/OUT allows the unit to send and receive MIDI commands via standard 5-pin DIN cables.

29 ULTRANET connector sends 16 channels of audio to a P16 monitoring system.

30 AES50 A and B connectors allow 96 channels of bidirectional audio for connection to S16 digital snakes or other X32 family products. Shielded CAT-5e cable should always be used for AES50 connections between X32 and S16 units.

31 XLR IN jacks receive inputs via XLR cable. These inputs feature 16 MIDAS-designed mic/line preamps with 72 dB of gain range. Each input has an adjacent red LED to indicate when 48 V phantom power supply is engaged.

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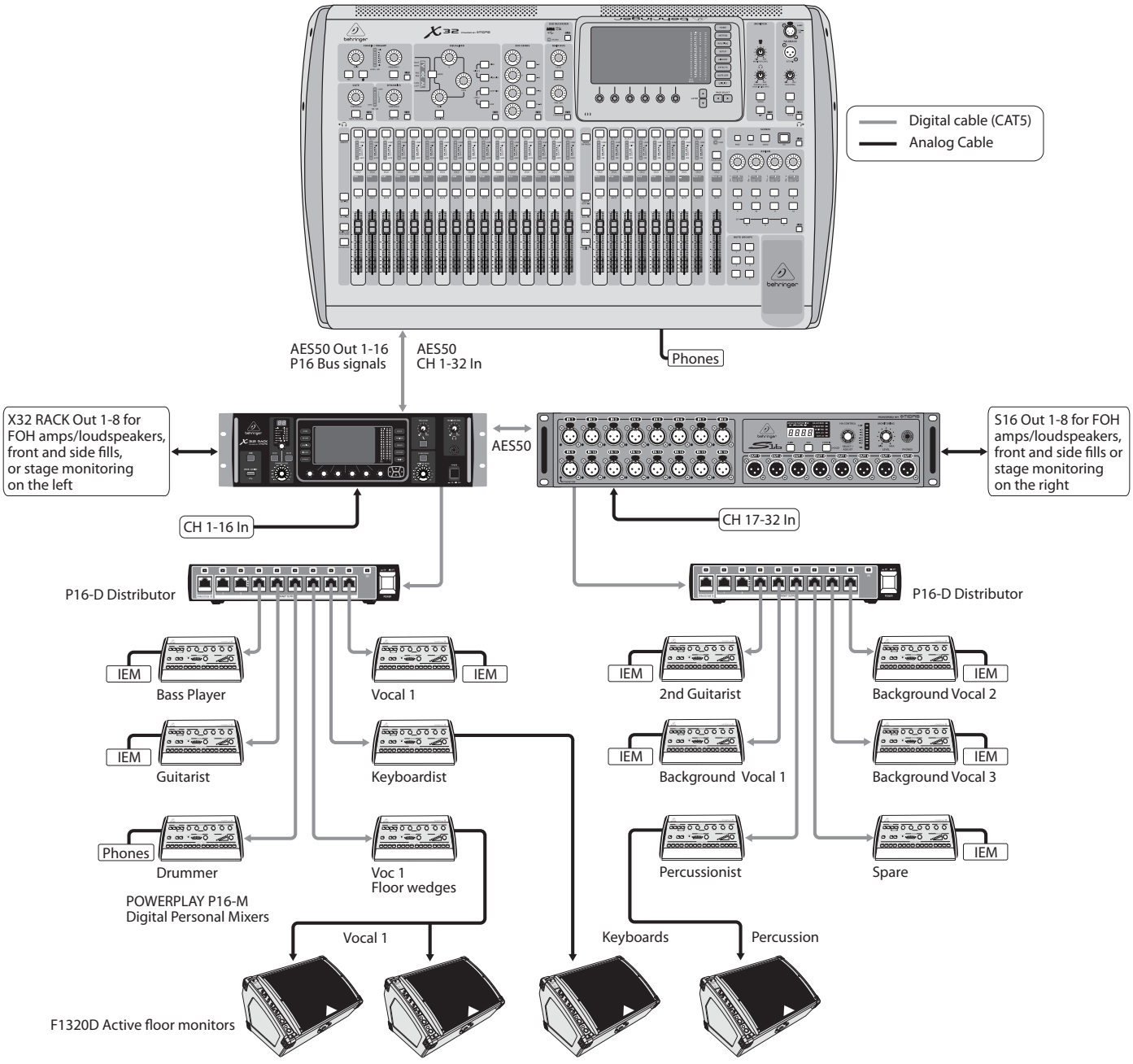
3. Callouts

X32 RACK Live Performance Setup with S16, X32, and P16 Monitor System



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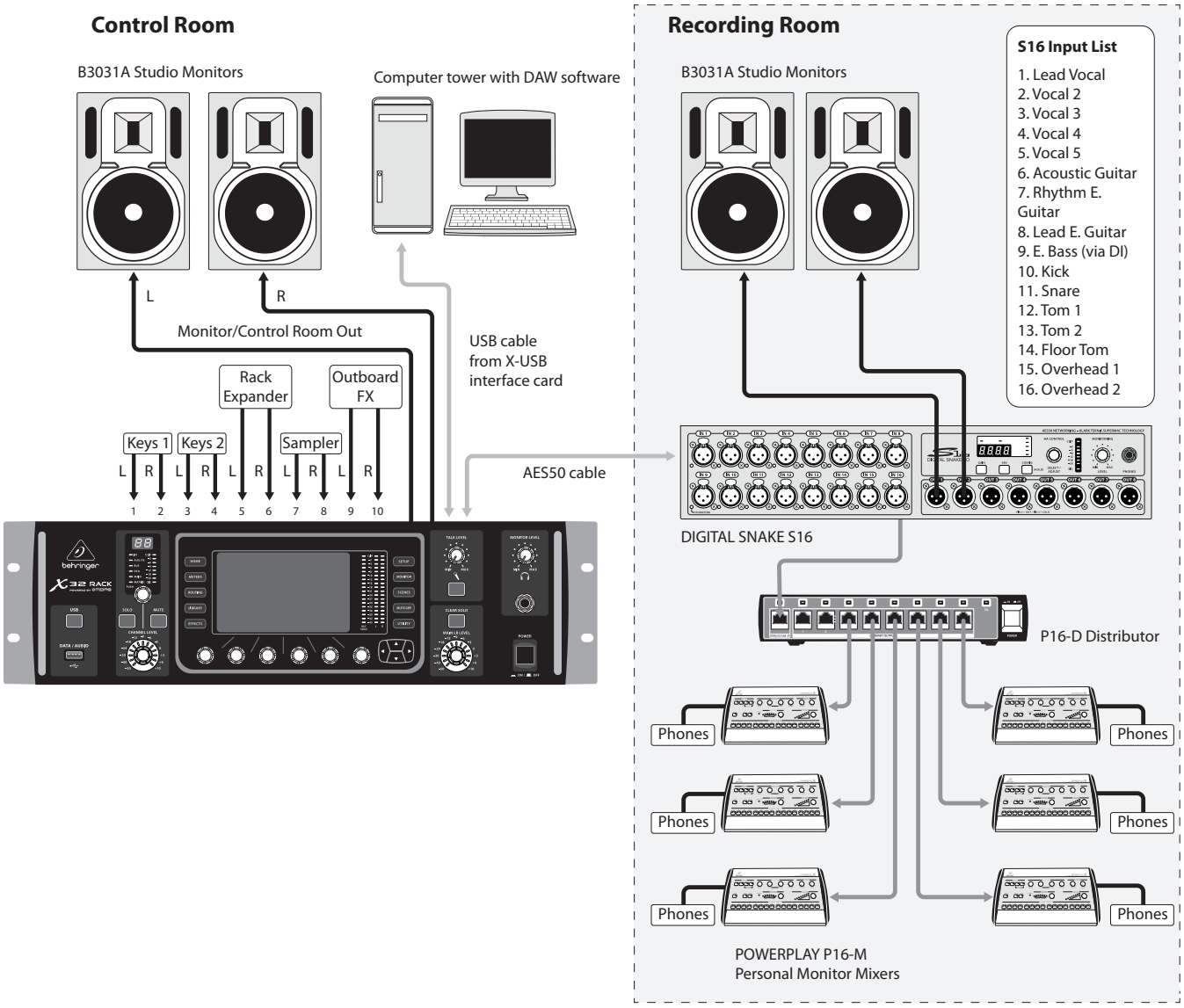
X32 RACK Recording Studio Setup



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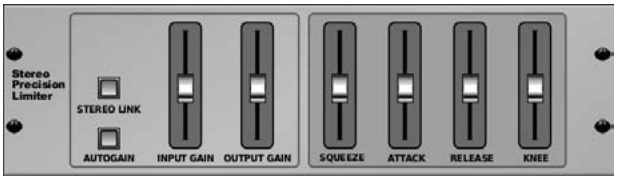
4. FX Descriptions

FX Descriptions

Here is a list and brief description of the effects available on the X32 RACK. When Stereo and Dual versions of an effect are offered, use the Stereo version when the left and right signal are to be altered together (e.g. on linked stereo channels or buses), or Dual when you want to dial different settings for the left and right signal. See the Topic Guide for instructions on how to add effects to a channel or bus.

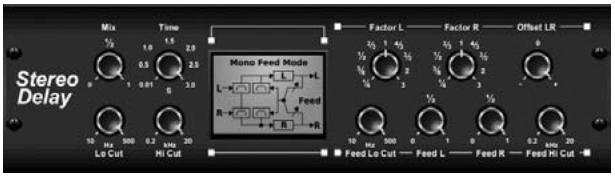
Stereo Precision Limiter



Stereo Precision Limiter allows you to set a precise volume limit, ensuring distortion-free, optimal signal integrity. Use X32's Stereo Precision Limiter to boost quiet signals or preventing clipping while preserving the level of "hot" signals.

AUTOGAIN activates an additional long-term gain correction, allowing automatic gain scaling of varying input level ranges. STEREO LINK applies limiting to both channels equally when activated. INPUT GAIN provides up to 18 dB of gain to the input signal prior to limiting. OUTPUT GAIN sets the final gain level of the processed signal. SQUEEZE adds compression to the signal to add punch and a slight distortion depending on the amount you dial in. ATTACK sets the attack time, ranging from 0.05 mS to 1 mS. RELEASE adjusts the release time from 0.05 mS to 1.04 seconds. KNEE adjusts the soft limiting threshold point from hard limiting (0 dB) to maximum soft limiting (10 dB).

Stereo Delay



Stereo Delay provides independent control of left and right delay (echo) times and features high and low pass filters for enhanced tone shaping of the delayed signals. Use the Stereo Delay to give your mono signals a wide presence in the stereo field.

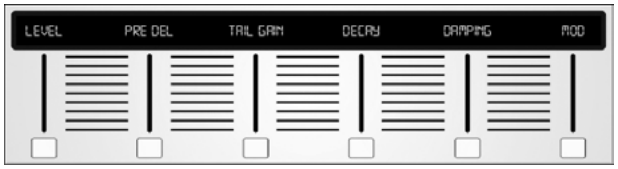
The MIX control lets you blend the source signal and the delayed signal. TIME adjusts the master delay time up to three seconds. LO CUT adjusts the low frequency cut, allowing lower frequencies to remain unaffected by the delay. HI CUT adjusts the high frequency cut, allowing higher frequencies to remain unaffected by the delay. FACTOR L sets the delay on the left channel to rhythmic fractions of the master delay time. FACTOR R sets the delay on the right channel to rhythmic fractions of the master delay time. OFFSET LR adds a delay difference between the left and right delayed signals. The FEED LO CUT/HI CUT adjusts filters in the feedback paths. FEED L and FEED R control the amount of feedback for the left and right channels. MODE sets the feedback mode: Mode ST sets normal feedback for both channels, X crosses feedbacks between left and right channels. M creates a mono mix within the feedback chain.

Triple Delay

Sometimes called a 3-Tap Delay, the Triple Delay provides three delay stages with independent frequency, gain, and pan controls. Create time-based echo effects with the Triple Delay to increase the sense of stereo separation.

TIME BASE sets the master delay time, which is also the delay time for the first stage. GAIN BASE sets the gain level of the first stage of the delay. PAN BASE sets the position of the first delay stage in the stereo field. LO CUT sets the frequency at which the source signal can begin passing through the delay. HI CUT sets the frequency at which the source signal no longer passes through the delay. X-FEED indicates that stereo cross-feedback of the delays is active. MONO activates a mono mix of both channels for the delay input. FEED adjusts the amount of feedback. FACTOR A controls the amount of delay time in the second stage of the delay. GAIN A controls the gain level of the second delay stage. PAN A sets the position of the second delay stage in the stereo field. FACTOR B controls the amount of delay time in the third stage of the delay. GAIN B controls the gain level of the third delay stage. PAN B sets the position of the third gain stage in the stereo field.

Ambience



Ambience creates a customizable virtual acoustic space in which to place the elements of a mix. Use Ambience to add warmth and depth without coloring the direct sound. (Inspired by the Lexicon Ambience Algorithm)

PRE DELAY sets the time before the reverb follows the source signal. DECAY adjusts the time it takes for the reverb to completely dissipate. SIZE controls the room size emulation. DAMPING controls the high frequency decay within the reverb tail. DIFFUSE controls the initial echo density. Level sets the volume output of the affected signal. LO CUT adjusts the low frequency cut, allowing lower frequencies to remain unaffected by the reverb. HI CUT adjusts the high frequency cut, allowing higher frequencies to remain unaffected by the reverb. MOD adjusts the level of reverb decay modulation. TAIL GAIN adjusts the volume of the reverb tail.

Reverse Reverb

Reverse Reverb takes the trail of a reverb, turns it around, and places it in front of the sound source. Use the swelling crescendo of the Reverse Reverb to add an ethereal quality to vocal and snare tracks. (Inspired by the Lexicon 300/480L)

Adjusting the PRE DELAY knob adds up to 200 milliseconds of time before the reverb follows the source signal. The DECAY knob adjusts the time it takes for the reverb to completely dissipate. RISE controls how quickly the effect builds up. DIFF(USION) controls the initial reflection density. SPREAD controls how the reflection is distributed through the envelope of the reverb. The LO CUT knob sets a low frequency beneath which the source signal will not pass through the reverb. The HiSvFr/HiSvGn knobs adjust a Hi-Shelving filter at the input of the reverb effect.

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Gated Reverb

This effect was originally achieved by combining a reverb with a noise gate. Our gated reverb creates the same impression by a special shaping of the reverb tail.

Gated Reverb is especially effective for creating a 1980s-style snare sound or to enlarge the presence of a kick drum. (Inspired by the Lexicon 300/480L)

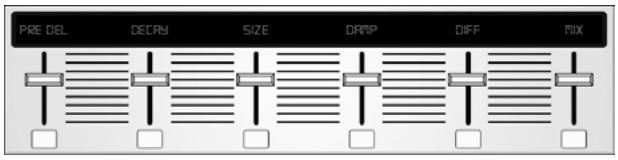
PRE DELAY controls the amount of time before the reverberation is heard following the source signal. DECAY controls the amount of time it takes for the reverb to dissipate. ATTACK controls how fast the reflection density builds up. DENSITY shapes the reverb decay tail. The higher the density, the greater the number of sound reflections. SPREAD controls how the reflection is distributed through the envelope of the reverb. The LO CUT knob sets the frequency beneath which the source signal will not pass through the reverb. The HiSvFr/ HiSvGn knobs adjust a Hi-Shelving filter at the input of the reverb effect. DIFF(USION) controls the initial reflection density.

Plate Reverb

A plate reverb was originally created by sending a signal through a transducer to create vibrations on a plate of sheet metal which were then picked up as an audio signal. Our algorithm simulates that sound with high initial diffusion and a bright colored sound. X32's Plate Reverb will give your tracks the sound heard on countless hit records since the late 1950s. (Inspired by the Lexicon PCM-70)

PRE DELAY controls the amount of time before the reverberation is heard following the source signal. DECAY controls the amount of time it takes for the reverb to dissipate. SIZE adjusts the size of the virtual room created by the reverb effect. The DAMP knob adjusts the decay of high frequencies within the reverb tail. DIFF(USION) controls the initial reflection density. The LO CUT knob sets the frequency beneath which the source signal will not pass through the reverb. The HI CUT knob sets the frequency above which the source signal will not pass through the reverb. The BASS MULT(IPLIER) knob adjusts the decay time of the bass frequencies. XOVER controls the crossover point for bass. MOD DEPTH and SPEED control the intensity and speed of the reverb tail modulation.

Hall Reverb



Classic Hall Reverb simulates the reverberation that occurs w hen sound is recorded in medium to large-sized concert halls. Use the Hall Reverb to give your mix a lush, three-dimensional quality that will make your performance sound larger than life. (Inspired by the Lexicon Hall)

The PRE DELAY slider controls the amount of time before the reverberation is heard following the source signal. DECAY controls the amount of time it takes for the reverb to dissipate. SIZE controls the perceived size of the space being created by the reverb effect. The DAMP slider adjusts the decay of high frequencies within the reverb tail. DIFF(usion) controls the initial reflection density. SHAPE adjusts the contour of the reverberation envelope.

Vintage Room

Vintage Room simulates the reverberation that occurs when sound is recorded in a small room. When you want to add a bit of warmth and just a touch of reverb, X32's Vintage Room breathes life into close-miced guitar and drum tracks. (Inspired by the Quantec QRS)

The VU meter displays the input and output levels. Set the early reflection times for the left and right channel with ER DELAY L and ER DELAY R. ER LEVEL sets the loudness of the early reflection level. REV DELAY controls the amount of time before the reverberation is heard following the source signal. HI/LOW MULTIPLY adjusts the decay time of the high and bass frequencies. TIME shows the duration of the reverb effect. ROOM SIZE adjusts the size of the room effect being created incrementally from small to large. HIGH CUT sets the frequency above which the source signal does not pass through the reverb. DENSITY manipulates the reflection density in the simulated room. (This slightly changes the reverb decay time). LOW CUT sets the frequency below which the source signal does not pass through the reverb.

Vintage Reverb

Based on the legendary EMT250, X32's Vintage Reverb delivers shimmering bright reverb that won't drown out or overpower your live or recorded tracks. Use Vintage Reverb to sweeten vocals and snare drums without sacrificing clarity.

When layer 1 is selected, the first slider on the left sets the reverb time from 4 milliseconds to 4.5 seconds. Slider 2 controls the low frequency multiplier decay time. Slider 3 controls the high frequency multiplier decay time. Slider 4 controls the amount of modulation in the reverb tail. When layer two is selected, slider 1 adjusts the pre delay. Slider 2 selects the low cut frequency. Slider 3 selects the Hi Cut frequency. Slider 4 adjusts the output level of the reverb.

When Layer 1 is selected, the far left encoder push button allows you to select between virtual front and rear outputs. Rear is suitable for drums due to it being less reflective. Front is well-suited for vocals and other dynamic instruments. The Vintage button enables the simulation of the input transformers.

Stereo/Dual Tube Stage/Overdrive

Tube Stage/Overdrive is a versatile effect capable of emulating a variety of modern and classic tube preamps. Available in stereo and dual-mono versions, use Tube Stage/Overdrive to dial in warm and fuzzy sounds from subtle to fully saturated.

DRIVE adjusts the amount of harmonics being driven by the effect. EVEN and ODD adjust the amount of even and odd harmonics. GAIN adjusts the output gain of the effect. LO CUT sets the input frequency below which the source signal will not pass through the effect. HI CUT sets the input frequency above which the input signal will not pass through the effect. BASS GAIN/FREQ adjust a low shelving filter at the output of the effect. TREBLE GAIN/FREQ adjust a high shelving filter at the output of the effect.

Stereo Imager

A Stereo Imager is typically used to control the placement of a signal within the stereo field during mixdown or mastering. Modeled after the BEHRINGER Edison rack unit, X32's Stereo Imager will lend a professional quality to your live and recording performances.

The BALANCE knob allows you to emphasize the mono or stereo components of the input signal. The mono and stereo signals can be panned independently with the MONO PAN and STEREO PAN knobs. OUT GAIN is used to compensate for level changes resulting from the effect. The phase can also be shifted using the shelving knobs. Select the frequency and bandwidth (Q) using the corresponding knobs, then adjust the gain with the SHV GAIN knob.

Rotary Speaker

Rotary Speaker emulates the sound of a Leslie rotating speaker. X32's Rotary Speaker provides more flexibility than its electro-mechanical counterpart, and can be used with a variety of instruments, and even vocals, to create a whirling, psychedelic effect.

The LO SPEED and HI SPEED knobs adjust the rotational speed of the SLOW and FAST Speed selection, and can be toggled with the FAST button. The ACCEL(eration) knob adjusts how quickly the speed increases and decreases from the Slow mode to the Fast mode. The rotation effect can also be disengaged with the STOP button, which will stop the movement of the speakers.

DISTANCE adjusts the distance between the Rotary speakers and the virtual microphone.

Chorus / Stereo Chorus

Chorus samples the input, slightly detunes it and mixes it with the original signal to produce a somewhat thicker, shimmering sound. Use it to thicken up background vocals, or to double the sound of brass and woodwind instruments.

Where as DELAY L/R set the total amount of delay for the left and right channel, WIDTH determines the amount of modulated delay. SPEED sets the modulation speed. MIX adjusts the balance of the dry and wet signals. You can further sculpt the sound by trimming some of the low and high end from the effected signal with the LO and HI CUT knobs. Additionally, the PHASE knob can tweak the phase offset of the LFO between left and right channel and the SPREAD knob adjusts how much of the left channel is mixed into the right and vice versa. Finally, the WAVE knob blends between the "Danish-style" digital triangular chorus sound and the classic analog sine wave.

Flanger / Stereo Flanger

The Flanger emulates the phase-shifting sound (comb-filtering) originally created by applying pressure against the flange of the reel on a tape recorder. This effect creates a unique "wobbly" sound that is quite dramatic when used on vocals and instruments.

The controls of this effect are nearly identical to the Chorus effect block. Additionally, the FEEDBACK can be adjusted with positive and negative amounts and also band-limited with the FEED HC (high-cut) and FEED LC (low-cut) knobs.

Stereo Phaser

A Stereo Phaser, or phase shifter, applies multiple STAGES of modulated filters to the input signal to create a "notch" in the frequency response, and then applies a MIX with the original for a "swirling" effect. Use X32's Stereo Phaser to add a "spaced-out" sound to vocal or instrument tracks.

SPEED adjusts the LFO rate and DEPTH sets the LFO modulation depth.

The BASE knob adjusts the frequency range of the modulated filters. The resonance is adjusted with the RESO knob. The WAVE knob shapes the symmetry of the LFO waveform and PHASE dials in an LFO phase difference between the left and right channel. The modulation source can also be the signal envelope, which produces vowel-like opening and closing tones. The ENV MOD knob adjusts how much this effect takes place (positive and negative modulation is possible), and the ATTACK, HOLD and RELEASE knobs all tailor the response of this feature.

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Tremolo / Panner

Stereo Tremolo creates an up and down volume change at a constant and even tempo just like the guitar amps of yesteryear. Use X32's Stereo Tremolo to add a unique "surf-music" texture to a vocal or instrument track.

SPEED adjusts the LFO rate and DEPTH sets the amount of modulation. PHASE can be used to set an LFO phase difference between the left and right channel, which can be used for panning effects. The WAVE knob blends the LFO waveform between triangular and square shape. The signal envelope, shaped by ATTACK, HOLD and RELEASE, can be used to modulate the LFO speed (ENV SPEED) and the LFO modulation depth (ENV DEPTH).

Stereo / Dual Pitch

Pitch shifting is often used in two different ways. One is to set the Mix knob lower and only use the Cent knob to make a small offset in pitch between the wet and dry tones. This results in a "voice doubling" effect that thickens the overall sound in a more subtle way. The extreme use of the effect is to turn the Mix knob fully-clockwise so the entire signal is effected. This way, the signal can be shifted into other keys up to an octave above or below the original. When used on a voice, this results in a "chipmunk" sound or a low Darth Vader effect.

When the SEMI and CENT knobs are set at 12:00, the pitch is not altered. Making adjustments by semitone will have a very pronounced effect, whereas changes to the CENT knob will be very minor. The DELAY knob creates a time difference between the wet and dry sound. The LO and HI CUT knobs allow the effected signal to be band-limited. The Dual Pitch effect allows the left and right channels to be adjusted independently, and allows GAIN compensation and panning of the two channels.

Stereo / Dual Guitar Amp

Modeled after the Tech 21 SansAmp, the Stereo / Dual Guitar Amp simulates the sound of plugging into a real guitar amp. From shimmering cleans to saturated crunch, X32's Stereo / Dual Guitar Amp allows an electric guitar player to sound great without using an amp on stage.

The PREAMP knob adjusts the amount of input gain prior to the band-specific distortion adjustment. BUZZ adjusts the low-end breakup, PUNCH adjusts the midrange distortion, and CRUNCH tailors the high-frequency content and distortion for smooth or cutting notes. The DRIVE knob simulates the amount of power amp distortion from a tube amp. The LOW and HIGH knobs allow EQ adjustment independent of distortion content, and the overall output is controlled by the LEVEL knob. The CABINET simulation can be bypassed if the guitarist is already using a real cab, which allows the effect to function like a boost or distortion pedal. The Dual Guitar Amp allows the left and right channels to be adjusted independently.

Wave Designer

Wave Designer is a powerful tool for adjusting signal transients and dynamics, such as attack and sustain. Use it to make a snare drum really "crack" in the mix or level out volume inconsistencies of slap bass tracks. (Inspired by the SPL Transient Designer)

Adjusting the ATTACK knob can add punch or tame overly dynamic signals. Increasing the SUSTAIN knob acts in a similar way as a compressor, allowing the peaks to carry longer before decay. The effect can also be used to reduce the sustain for a more staccato sound. The GAIN knob compensates for level changes caused by the effect.

Stereo Exciter / Dual Exciter

Exciters increase presence and intelligibility in live sound applications, and are indispensable for adding clarity, air and harmonic overtones in the recording studio. This effect is particularly useful for filling out the sound in difficult rooms and for producing a more natural live/recorded sound. (Inspired by the famous Aphex Aural Exciter)

Set the frequency of the side-chain filter with the TUNE knob, and further shape the filter slope with the PEAK and ZERO FILL knobs. Turning the TIMBRE knob left of center adds more odd harmonics, while turning it right of center adds more even harmonics. Adjust the harmonic content added to the signal with the HARMONICS knob, and blend in the effected signal with the MIX knob. Engage the SOLO MODE to isolate only the audio resulting from the effect so you can hear exactly what you're adding to the mix.

Stereo Enhancer / Dual Enhancer

X32's Enhancers are so called "Psycho EQs". They can enhance the signal spectrum in bass, midrange and high frequencies but they differ from traditional equalizers. When you need to generate maximum punch, clarity and detail, without turning up the overall volume, our enhancers are the solution. (Inspired by the SPL Vitalizer)

Adjust the BASS, MID and HI GAIN knobs to add or reduce content in those spectrums. The BASS and HI FREQuencies can be specifically selected, while the MID Q (bandwidth) can be adjusted instead. The OUT GAIN knob compensates for changes in level resulting from the effect, and the SPREAD knob (Stereo version only) emphasizes the stereo content for a wider mix. Engage the SOLO MODE to isolate only the audio resulting from the effect so you can hear exactly what you're adding to the mix.

EN

Mood Filter

The Mood Filter uses an LFO generator and an auto-envelope generator to control a VCF (voltage-controlled filter), as well as a side chain function where the channel B signal controls the envelope of channel A. When applied to electronic instruments, the Mood Filter can be used to emulate the natural sound of acoustic instruments. (Inspired by the MiniMoog)

This filter can be modulated with the signal's envelope using the ENV MOD (with positive and negative amounts), ATTACK and RELEASE knobs, or the LFO can modulate the filter. The WAVE knob selects between 7 different wave forms – triangular, sine, saw plus, saw minus, ramp, square, and random. The PHASE can be offset by up to 180 degrees. The SPEED knob adjusts the rate of the LFO and the DEPTH adjusts the amount of LFO modulation. Adjust the resonance of the filter until self-oscillation with the RESO(nance) knob. BASE adjusts the range of the filter from 20 Hz to 15 kHz. The MODE switch selects between low pass (LP), high-pass (HP), band-pass (BP) and Notch. Use the MIX knob to blend the effected signal with the dry sound. With the 4 POLE switch engaged, there will be a steeper slope than the OFF (2 pole) setting. The DRIVE knob adjusts the level and can also introduce an overdrive effect (as with real analogue filters) if pushed hard. In Sidechain mode, only the left input signal is processed and fed to both outputs. The envelope of the right input signal can be used as a modulation source.

Delay + Chamber

Here we have combined Delay and Chamber reverb, so a single device can provide a variety of delay settings, plus add just the right type and amount of reverb to the selected signal. This device only uses one FX slot. (The Reverb is Inspired by the Lexicon PCM 70)

Use the BALANCE knob to adjust the ratio between delay and reverb. Low frequencies can be excluded with the LO CUT knob, and the MIX adjusts how much of the effect is added to the signal. The TIME knob adjusts the delay time for the left channel delay, and the PATTERN sets the delay ratio for the right channel delay. Adjust the FEEDBACK and trim some high frequencies with the FEED HC (high-cut) knob. The XFEED knob allows you to send the delay sound to the reverb effect, so instead of running completely parallel, the reverb effects the echos to a selected degree. The PREDELAY knob determines the hesitation before the reverb affects the signal. The DECAY knob adjusts how quickly the reverb fades. The SIZE controls how large or small the simulated space is (room, cathedral, etc.). The DAMPING knob determines the decay of high frequencies within the reverb tail.

Chorus + Chamber

Taking up only one FX slot, the Chorus + Chamber effect combines the shimmer and doubling characteristics of a studio-grade Chorus with the sweet sound of a traditional Chamber reverb. (Reverb is Inspired by the Lexicon PCM 70)

The BALANCE knob adjusts the balance between chorus and reverb. Low frequencies can be excluded with the LO CUT knob, and the MIX knob adjusts how much of the effect is added to the signal. SPEED, DELAY and DEPTH adjust the rate, delay, and modulation depth of the chorus. The LFO PHASE between left and right channel can be offset by up to 180 degrees, and WAVE adjusts the LFO waveform from a sine wave to triangular wave. The PREDELAY knob determines the hesitation before the reverb affects the signal. The DECAY knob adjusts how quickly the reverb fades. The SIZE controls how large or small the simulated space is (room, cathedral, etc.). The DAMPING knob determines the decay of high frequencies within the reverb tail.

Flanger + Chamber

Add the mind-bending, filter-sweeping effect of a state-of-the-art Flanger to the elegant sweetening of a traditional Chamber reverb—all in one FX slot. (Reverb is Inspired by the Lexicon PCM 70)

The BALANCE knob adjusts the ratio between flanger and reverb. Low frequencies can be excluded with the LO CUT knob, and the MIX knob adjusts how much of the effect is added to the signal. SPEED, DELAY and DEPTH adjust the rate, delay, and modulation depth of the flanger. FEEDback can be adjusted with positive and negative amounts. The PHASE can be offset by up to 180 degrees. The PREDELAY knob determines the hesitation before the reverb affects the signal. The DECAY knob adjusts how quickly the reverb fades. The SIZE controls how large or small the simulated space is (room, cathedral, etc.). The DAMPING knob determines the decay of high frequencies within the reverb tail.

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Delay + Chorus

This combination effect merges a user-definable Delay (echo) with a studio-quality Chorus sure to fatten up even the "skinniest" track. Uses only one FX slot. (Inspired by the TC Electronic D-Two)

The TIME knob adjusts the delay time, and the PATTERN knob sets the delay ratio for the right channel and negative values activate a cross feedback between the two channels. The FEEDHC knob adjusts the delay high-cut frequency, while the FEEDBACK knob adjusts the number of repeats. The X-FEED knob allows you to send the delay sound to the chorus effect. The BALANCE knob adjusts the ratio between delay and chorus. SPEED, DELAY and DEPTH adjust the rate, delay, and modulation depth of the chorus. The right channel LFO PHASE can be offset by up to 180 degrees, and WAVE adjusts the chorus character by shaping the LFO waveform from sine wave to triangular wave. Use the MIX knob to blend the effected signal with the "dry" sound.

Delay + Flanger

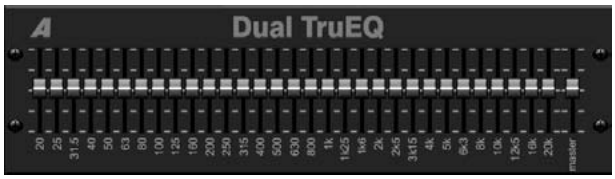
This handy dynamic duo blends the "woosh" of soaring jet planes with classic Delay, and can be adjusted from mild to wild. This combination effect only takes up one FX slot. (Inspired by the TC Electronic D-Two)

The TIME knob adjusts the delay time, and the PATTERN knob sets the delay ratio for the right channel and negative values activate a cross feedback between the two channels. The FEEDHC knob adjusts the delay high-cut frequency, while the FEEDBACK knob adjusts the number of repeats. The X-FEED knob allows you to send the delay sound to the flanger effect. The BALANCE knob adjusts the ratio between delay and flanger. SPEED, DELAY and DEPTH adjust the rate, delay, and modulation depth of the flanger. The right channel LFO PHASE can be offset by up to 180 degrees, and FEED (positive and negative amounts) adjusts the feedback effect. Use the MIX knob to blend the effected signal with the "dry" sound.

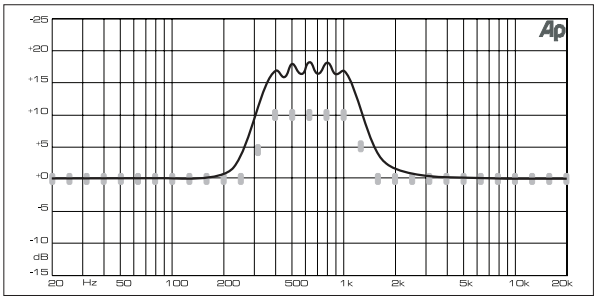
Dual / Stereo GEQ

These are standard graphic equalizers that provide 31 bands of adjustment between 20 Hz and 20 kHz. A master volume slider compensates for changes in volume caused by the equalization. A maximum boost or cut of 15 dB is available for each band.

Dual / Stereo TruEQ

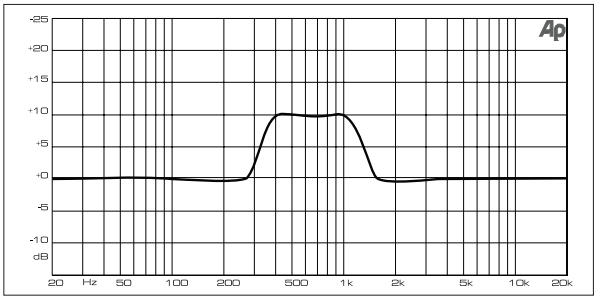


The TruEQ incorporates a special algorithm that compensates for the gain adjustment overlapping effect that adjacent frequency bands have on one another. On a standard EQ, when neighboring bands are boosted together, the resulting effect is magnified beyond what is visible from the positioning of the sliders.



Graphic equalizer without frequency response correction.

This compensated EQ will produce an adjustment that is identical to the actual positioning of the sliders.



Graphic equalizer with frequency response correction.

Dual / Stereo DeEsser

Rotate the 1st and 2nd encoder to adjust the low and high-band reduction respectively. Press the 1st encoder to select male or female to optimize the frequency for the vocalists range. Repeat the steps for the B channel using the 3rd and 4th encoders. If using the Stereo DeEsser, press the 5th encoder to select between Stereo or Mono/Stereo, which allows the left and right channels to be adjusted independently.

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5. Topic Guide

5.1 Starting up, shutting down, and firmware updates

We recommend switching the X32 RACK on before any active sound reinforcement system is connected. The function called "Safe Main Levels", located in the Setup/General Preferences screen, automatically turns down the main LRC bus levels when booting the console, and also prevents any scene loading actions from affecting (specifically turning up) the main levels.

Synchronization and Sample Rate settings can also be adjusted on the Setup/Config page, but please note that changing the sample rate will require a console reboot.

◊ **Please Note: Settings under 'Link Preferences', 'Panning Mode', and 'DCA groups' are stored with the Scene data while all other settings made on the Setup/Config page are not stored in any preset and will not be initialized either. Please verify before using the X32 RACK that the sample rate is set correctly and if the synchronization source is selected appropriately. If set to external synchronization via one of the two AES50 ports, while no clock source is actually connected or switched on, then the corresponding small square icon in the main display's top row would be red rather than green. In normal state you should only see 1-4 green squares in the top section depending on the units connected.**

Note that if the X32 RACK has previously been in use by somebody else, and you feel unsure about its actual status, you can reset it to default settings in either of two convenient ways:

1. While the console is booting up and the "X32" logo appears on the screen, press and hold the "Scenes / UNDO" button, keeping it depressed until the console is fully operational and the Home screen is displayed. The console will now be in the exact same state as it was when first shipped from the factory. However, you can immediately revert back to the status the console was in before being switched off by pressing the Scenes/UNDO button.
2. You can also reset the console any time after booting by pressing "Setup/Config" -> "Initialize".

The X32 RACK regularly stores the console's status to its onboard flash memory, so there is usually nothing wrong with switching it off, and you do not have to explicitly save the current status. However, when a large number of parameters have been recently changed, storing all of them to flash can take up to 1 minute, in a "worst-case" scenario. In order to prevent any errors by losing power during this type of storage operation, we recommend using the "Safe Shutdown" function from the Setup/Global page, an operation similar to un-mounting a USB thumb-drive from your PC.

Updates:

The X32 RACK firmware can easily be updated by performing the following steps:

- Download the new console firmware from the X32 RACK product page onto the root level of a USB thumb drive
- Plug the USB thumb drive into the front panel USB connector while the console is turned off
- Hold the USB button depressed while switching the console on. While booting, the X32 will run a fully automatic firmware update, which will take 2-3 minutes longer than the regular boot sequence

When no update file is available on the USB drive, or when it is corrupted, the update mode will remain active, preventing the X32 RACK from booting regularly. Switch the console off and back on without holding the USB button to boot the console with the existing firmware.

The USB socket is not suitable for other non-memory USB devices like keyboards, mice, lamps, etc.

5.2 Default setup for connecting to monitoring and P.A. systems

The X32 RACK comes pre-configured with the local XLR inputs connected to input channels 1-16, and XLR outputs 1-6 connected to the mix bus masters 1-6. The Main LR (stereo) signal is normally put out on XLR outputs 7 and 8.

The Monitoring outputs on ¼" connectors, and the Phones output always carries either the Monitor Source signal or any solo signal, whenever a solo button is active. Press the View button in the Monitor section to check or change the solo and monitoring preferences.

1. Power up the X32 RACK console first, before any connected power amps or speakers are switched on.
2. Connect cables to XLR outputs 7 and 8 on the rear panel, connecting the other ends of the cables to the inputs of your P.A. system. These normally carry the main stereo bus left and right.
3. All buses or input channels that are to be put out on the main PA system must have their Main LR Bus switches on. Use the selected channel's pan control to place the signal within the main stereo field, and the channel's fader to set the volume.
4. Use the rear panel Monitoring outputs to connect monitor speakers or, if you prefer, use the ¼" output in the front panel to connect your headphones. You will either hear the monitor source signal, which is Main Stereo by default, or any channel with its solo button being active.

5.3 How do I connect a microphone, process its signal and send it out to the P.A. system?

1. Turn the Channel Select knob to select the desired channel and press the knob to confirm. Make sure the Channel Level knob is turned down.
2. On the Home screen, "home" tab, press the Layer down button and ensure that the phantom power is disengaged.
3. Connect a microphone to XLR input 1 on the X32 RACK's rear panel.
4. Engage the phantom power for channel 1 if the microphone requires it (such as a condenser mic).

   Note - It is best practice to mute the respective channels prior to switching their phantom power supply on or off. Otherwise, the change of charge may cause an audible popping noise. Gain adjustments might also produce audible click noise when adjust shortly after having switched phantom power on or off.
5. On the "home" tab's first layer, adjust the Gain knob (1st encoder) to set the gain as necessary, using the input meter on the left side of the screen as a guide.
6. Also on the "home" tab, adjust the channel's Gate and Compressor as desired.
7. Press the Page Select right button to access the EQ tab and adjust the channel's equalization if necessary.
8. Press the 6th encoder to assign the channel to the main bus, then adjust the encoder to place the signal within the stereo field.
9. Adjust the Channel Level knob for channel 1 to the 0 dB region, then slowly turn up the Main LR Level knob until you hear the mic signal amplified through your P.A. system.

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5.4 How do I add one of the 8 internal effects to the sound?

There are two types of effects that are commonly used:

- "Effects Loop" (side chain) style effects, where multiple channels all send varying amounts of their signal to a common effect, such as a reverb, delay, or chorus.
- "Insert" style effects that are inserted in to the signal path of a single channel of audio. Examples would be a graphic EQ, filter, exciter, or tube emulator.

To apply an "Effects Loop" style effect:

- Press the "Effects" menu button. The main screen will show the FX home screen where different effects processors are assigned to the 8 processing slots.
- Adjust rotary encoder #6 to highlight the first effects processor; it will be surrounded by an orange outline.
- Adjust rotary encoder #1 and rotary encoder #2, selecting your desired bus as the source for both the left and right inputs of the first effect processor.
- Adjust rotary encoder #5 to select a specific effect processor, such as "Ambience".
- Rotate the Channel Select knob until 1 L appears in the channel number display and press the knob. Use the Channel Level knob to bring the return up to 0 dB. Turn the Channel Select knob to the right one click so that 1r appears in the display, the press the knob. Bring the return level up to 0 dB.
- Back on the Effects page, press the PAGE SELECT right button to switch the screen to the editor for the Ambience processor. The screen will switch to an editor page for the first processor. Adjust the rotary encoders to tailor the effect to your liking.
- Press the Home button again and tab over to the 'sends' page. Raise the virtual faders for the channels to which you want to add the effect. The higher you raise the fader, the more of that channel's signal will be sent to the processor.

To apply an "insert" style effect:

- Press the "Effects" menu button.
- As the effects on the left side are also able to handle complex send effects like reverb, the slots on the right side shall be used for insert effects like limiter, graphic EQ, etc. You can also use insert effects on the left side, but this will limit your use of reverbs and other processor-intensive effects.
- Adjust rotary encoder #6 to highlight one of the effects processors on the right side; it will be surrounded by an orange outline.
- Adjust rotary encoder #1 and rotary encoder #2, selecting "Insert" as the source for both the left and right inputs of the effect processor.
- Adjust rotary encoder #5 to select a specific effect processor, such as "precision limiter".
- Select the specific input or output channel you wish to use the inserted effect on.
- Press the HOME button, then the PAGE SELECT right button to navigate to the selected channel's "Config" screen.
- Adjust rotary control #6 to select the specific processor you have applied the effect to, in this case "Ins FX 5L". Press the encoder to connect the selected insert effect.
- The Precision Limiter is now applied as an insert on the selected channel. Sending more than one channel through the same insert effect is, of course, prohibited. There will be a warning when you try to insert an effect slot that has already been used as an insert on any other channel. Both sides of a dual type effect can be used as inserts on different channels or buses.

5.5 How do I use an outboard effects processor?

In some situations, you may wish to use a loop-style effect provided by an external effect processor, as opposed to using one of the eight built-in processors. To do so:

- Press the ROUTE button, page right to the "Aux Out" screen, and adjust the first and fourth encoders to tie a rear panel ¼" aux out, such as Aux Out 1, to an available mix bus, such as Mix Bus 2.
- Patch rear panel Aux Output 1 to the input of your external effects processor.
- Patch the output of the external effects processor to rear panel Aux Input 1.
- Rotate the Channel Select knob until A1 appears in the display, the press the knob. On the Home screen, 'home' tab, verify that the Main LR is highlighted.
- Move the Aux 1 channel level to 0 dB.
- Adjust the settings on the external effects processor to taste.

5.6 How do I set up live stage monitoring?

Setting up a live stage monitor mix using conventional monitors:

1. Press the ROUTE button and page right to the Analog Out page.
2. Adjust the first encoder to select a rear panel analog output (e.g. Output 1), then adjust the fourth encoder to select a mix bus (e.g. Mix Bus 1). When the source and destination have been selected, press the 4th encoder to complete the assignment.
3. Adjust the 5th encoder to set up the monitor send as pre-fader, or pre/post EQ. This will prevent the monitor mix from changing when the front-of-house mix is adjusted.
4. Connect a cable from rear panel analog Out 1 to the input of:

a) A powered stage monitor

b) An external amplifier feeding a passive stage monitor

c) A transmitter for a set of wireless in-ear monitors

5. Rotate the Channel Select knob to select Bus 1, then press the knob. Adjust the Channel Level knob to 0 dB. You can change the output on this bus later.
6. To adjust the mix sent to the monitor, select an input channel with the Channel Select knob, nagivate to the Home screen's 'sends' tab, then raise the faders for each bus that the channel should be sent to.

Setting up a live stage monitor mix using the S16 Digital Stage Box:

1. Connect the S16 stage box to AES50 port A on the rear panel of the console using a standard Cat 5 Ethernet cable.
2. On the stage, connect a cable from Output 1 of the S16 stagebox to the input of the stage monitor.
3. Press the ROUTE button and page right to the AES50 A page.
4. Adjust the first encoder to select "Out 1-8" for the first 8 outputs of the AES50 A bus, then press the encoder to make the connection.
5. Analog Outputs 1-8 on the X32 RACK are now routed to the first 8 outputs of the AES50 A connector, which in turn feeds the 8 analog outputs of the S16 stage box connected to the AES50 A connector.
6. Adjust the monitor mix that feeds Mix Bus 1, as described above.

Setting up a live stage monitor mix using the P16 Ultranet Bus:

1. Connect an Ultranet personal monitor mixer (or P16 distribution amplifier) to either the P16 connector on the rear panel of the X32 RACK, or to the P16 connector on an S16 stage box that is connected to the X32 RACK console.
2. Press the ROUTE button and page right to the P16 page.
3. Adjust the first and fourth encoders to pair specific audio slots on the P16 bus with direct outs of various console channels, pressing the fourth encoder to complete each connection.
4. Any personal mixer connected to the P16 bus will now receive up to 16 individual audio channels, allowing its user to craft their own unique monitor mix.
5. When using the P16 connector on an S16 connected to AES50 port A, press the ROUTE button and page right to the AES50 A page, then adjust the fifth encoder to select 'P16 1-8', then press the encoder. Adjust the sixth encoder to select 'P16 9-16', then press the encoder. Note: The P16 signals on the S16 are sourced from AES50 channels 33-48.

Communicating with talent on stage:

1. Press the Monitor button and page over to the 'talkback A' tab.
2. Adjust the fourth encoder to set the destination of the talkback microphone, pressing the encoder to set the connections. The talkback mic can be routed to any of the individual mix buses that are feeding a monitor system.
3. Adjust the third encoder to set the volume of the talkback mic.
4. Press the button below the Talk Level knob to activate the talkback microphone to communicate with the stage talent. The talkback button can be set to latching or non-latching using the push action of the 5th encoder.

5.7 Everything you ought to know about Solo and monitor sources

The X32 RACK allows you to monitor audio sources on a set of headphones or monitor speakers when operating the console from a front-of-house position.

1. Connect a set of headphones to the ¼" phones jack on the front panel.
2. Alternatively, connect a set of monitors to the ¼" monitor outs on the rear panel.
3. Press the Monitor button.
4. Adjust the 6th encoder to select the audio source for the monitor bus, for example LR PFL (LR Pre-Fader Listen). This will output the main LR pre-fader signal to the monitors when no Solo button is selected on any of the channels or buses.
5. Adjust the first encoder to set the level of the monitor signal. Then, adjust the level of the connected headphones and/or monitor using their respective level controls on the X32 RACK front panel.
6. Press the Solo button on any input or output channel to send that channel's audio to the solo bus. This operation will not affect the mix that the audience is hearing, nor the monitor mix heard by the talent. Input channels take priority over DCAs, DCAs take priority over buses, and buses take priority over main LRC/mono.
7. Press the "Clear Solo" button above the main fader to quickly clear the solo status of any and all channels. This is particularly useful when solo is active on a channel that is not present on the current input layer and you wish to quickly clear its solo status.

The solo bus also has various preferences that can be set using the second encoder, allowing you tailor its operation to your specific working style. Examples include:

1. Use "Exclusive" if you want the act of pressing another solo button to automatically disengage the previous solo. This is useful if you know you will never want to solo more than one channel of material at the same time. In this mode you can press several Solo buttons at the same time to solo the corresponding channels together.
2. Use "Solo Follows Select" if you want the solo selection to automatically follow any channel that you have selected. This allows you to quickly hear the audio of that channel in your headphones when you select it to adjust EQ, compression, etc. Remember that you need to solo a channel first before this function is active.
3. Use "Select Follows Solo" when you want the reverse to occur: Any channel that is soloed will automatically become the currently selected channel, allowing you quickly make adjustments for any channel you have soloed.
4. Use the "Channel Solo AFL" to listen to the channel signal after the fader and stereo PAN.
5. Use "Mix Bus Solo AFL" to listen to the mix bus signal after the fader and stereo PAN.
6. Use "DCA Group AFL" if you want to put the contents of a soloed DCA group into after-fader listen mode when the solo button is pressed on a DCA channel.
7. "Use Master Fader" option lets you adjust the solo signal on the monitor/ headphones with the Master fader on the console. Note: The master output level cannot be changed in this mode. This mode has primarily been designed for using the X32 RACK as a pure monitor console where the main bus is not used for your PA system.

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5.8 How do I share signals over AES50 Supermac network?

In many live sound situations, a single mixing console is used to cover both the front of house (FOH) mix that the audience hears, as well as all the individual "monitor mixes" that are sent to stage wedges or transmitters for in-ear monitor systems.

However, in larger live sound situations, it is common to operate two separate consoles, one that covers the FOH mix, and a second, completely independent console that covers just the monitor mixes that are sent to the talent. This makes a lot of sense, because the FOH engineer can concentrate 100% on the audience mix, while a completely different monitor engineer can dedicate himself to the thankless task of crafting great monitor mixes for the different musicians.

With an analog console, operating separate FOH and monitor consoles can be quite expensive, because the original stage microphone signals have to all be "split" into two copies, using an expensive multi-channel microphone splitter. The splitters ends one set of mic signals to the FOH console and the other set to the monitor console. Microphone splitters are a specialized piece of equipment and ones that work reliably and sound good are very expensive.

The X32 family of products, however, makes using separate FOH and monitor consoles easy and affordable. This is due to the fact that the microphone signals, once digitized, can be easily duplicated and sent to multiple locations, using a single off-the-shelf shielded shielded Cat-5e Ethernet cable. Now, an expensive and bulky microphone splitter can be replaced by a couple of low-cost S16 digital stage boxes, and running separate FOH and monitor consoles is within reach of even the most modest production.

This is an example for using 2 consoles and 2 stage boxes (possible are up to 3 per AES50 port) in a monitor/FOH setup:

1. Connect the AES50 A port on the first S16 to the AES50 A port on the X32 on-stage console via Cat-5.
2. Connect the AES50 B port on the first S16 unit to the AES50 A port on the second S16 via Cat-5.
3. Connect the AES50 A port of the FOH X32 unit to the AES50 B port of the on-stage X32 via Cat-5.
4. Now the configuration of the monitor console has to be set. Keep in mind that in this configuration, the on-stage console will be the one controlling the input gains of the mic preamps, so a good and intensive soundcheck should be done.
5. Press the ROUTING switch next to the display on the on-stage console. On the HOME tab select "AES50 A 1-8" as source for "Inputs 1-8", "AES50 A 9-16" for "Input 9-16", and accordingly for channels 17-32.
6. To route the channels through the on-stage console to the FOH console, switch to the AES50 B page and set "Output 1-8" to "AES50 A 1-8", "Output 9-16" to "AES50 A 9-16", etc.
7. On the FOH X32 console, press the ROUTING switch next to the display. On the HOME tab select "AES50 A 1-8" as source for "Inputs 1-8", "AES50 A 9-16" for "Input 9-16", and accordingly for channels 17-32.
8. To get the main out from the FOH back to one of the stage boxes to feed the PA, the main outs of the console which are routed per default to OUT 7 and OUT 8 have to be routed through the on-stage X32 console. To achieve this, select the AES50 A tab and set Out 1-8 to "OUT 9-16". On the on-stage console, choose the AES50 A tab and set Output 1-8 to "AES50 B 1-8". The Main Outputs of the FOH console are now available on the first S16 on OUT 7 and OUT 8 to connect your main PA system.
9. Ready to rock!

5.9 AES50 cabling requirements

In order to ensure trouble-free operation when connecting X32 consoles to other X32 mixers or to S16 stage boxes, the following specifications should be met when choosing your cables:

- Shielded Cat-5e cables only
- Ethercon terminated cable ends
- Maximum cable length 100 meters (300 feet)

5.10 What kinds of Utilities are available?

The X32 RACK console provides various utilities that make the console much easier and more fun to use, while providing a great deal of flexibility and power. Examples Include:

Channel Customization: Various input and output channels can have custom colors, names, and icons assigned to them. Using these functions, you will always know exactly what source and destination is tied to the channel, with no need for board tape and sharpie pens. For example, an input channel could be labeled "kick drum" while the channel for a mix output could be labeled "Joey's monitor".

- Press the Setup button and page over to the 'scribble strip' tab.
- Use the 1st encoder to select a channel to be edited, then choose a color, icon and name.

Copy/Paste: The X32 RACK also provides a "copy and paste" function that allows you to take settings you have configured for one channel, and copy those settings to another channel.

- Navigate to a channel whose settings you want to copy using the Channel Select knob.
- Press the HOME button, then the UTILITY button.
- Press the 5th encoder to copy all settings of the selected channel into the copy buffer.
- Navigate to the channel that the copied settings will be pasted into.
- Adjust the first encoder to select which aspects of the channel you wish to copy from the source channel (i.e. the one in the paste buffer).
- Press the 6th encoder to "paste" the copied settings into the currently selected channel.

Store / Load Presets: The X32 RACK allows you to save and load presets of channel settings, as well as settings made in the internal effects processor. These stored settings can later be recalled as needed. Since the stored files can also be stored and recalled to an attached USB drive, this means that you can save your favorite channel settings and effects on one console, and then quickly and easily recall and use them on a completely different X32 console.

- Navigate to a channel whose settings you wish to store using the Channel Select knob.
- Press the HOME button, then the UTILITY button.
- Press the 3rd encoder to store all settings of the selected channel. A new screen will appear where you can apply a custom name to the saved preset.
- To load a preset from the UTILITIES screen, adjust the first encoder to select which aspects of the selected channel you wish to recall, then press the 2nd encoder. A confirmation screen will pop-up, asking you to confirm you wish to load a preset to the currently selected channel. Use the page left/right buttons to confirm or cancel.
- Press the LIBRARY button to go straight to the "libraries" screen, where you can scroll through a list of stored preset libraries.
- Use the 5th and 6th encoders to import/export presets to/from an attached USB drive.

5.11 Using the X32 RACK in recording and production studio environments

The X32 RACK can function equally well as part of a live sound or recording studio environment.

- The console contains extremely clean and detailed microphone preamps, allowing you to capture up to 16 separate microphones for recording even a very large ensemble.
- High-end analog to digital converters for each channel preserve the audio quality as it is recorded to assorted DAW software.
- With the X32 RACK's built-in X-USB card, individual channels of audio can be sent, in the digital domain, to a studio DAW computer, using USB 2.0. With this card, the X32 RACK becomes the "world's biggest computer audio interface" allowing up to 32 channels of microphones to be sent into the DAW software (with the addition of an S16 stagebox), while at the same time allowing up to 32 individual channels of DAW tracks to return back to the console for mixing "out of the box".
- With the X32's full recall of all preamp and monitor settings, the console makes a great solution for the modern home and project studio, where multiple projects are worked on in "stages" and previous settings need to be quickly and easily recalled. For example, if a band returns the following week to pick up where they left off, a single "load project" command can return the console to exactly where it left off, in terms of mic gain settings for the different instruments, as well as various different monitor mixes for the different performers.
- Since the X32 RACK works with the affordable S16 digital stagebox, the combined system makes a great solution for routing audio signals between a separate studio and control room. The S16 and various Ultranet personal monitor mixers can be set up in the studio, while the console itself is set up in the control room. A single shielded Cat5-e Ethernet cable is all that is needed to connect the 16-32 channels of audio from 1-2 S16 boxes and all of the Ultranet mixers, a much better alternative than a thick, noisy, and expensive analog snake. In more modern homes and apartments that have Cat-5 cabling running through the walls as part of a pre-built "structured wiring" package, the S16/Ultranet mixers and X32 console can even be set up in different rooms, with no need to run a long cable or leave any doors partially open!
- The various X-USB card modes to be selected on the Setup/card page can be used to reduce the traffic over USB, just in case your computer has difficulty handling the full 32x32 channel capacity. See Chapter 6 for details.
- When running a 32 track live recording from your FOH desk, you can simply assign the card outputs to the mic inputs (local or stage box), using the 'Routing/card out' page. Note however, that the mic preamp gain (also for recording) will be controlled from the FOH console, and Gain changes during the show can be heard in the recording.
- When recording track by track into a DAW, you will need to pass all audio from the mic preamp of the console directly into the PC, and then back into the console for monitoring. In this case, the DAW track's record-ready status will determine which direct and which previously recorded signal will be audible on the console.
- This configuration can also be used in a live setup where additional FX processing using native plug-ins is required. Your PC (provided it has the capacity to do so) could perform as a 32 channel outboard effects processor, allowing you to apply your favorite production processing in a live environment to every single channel. You should however, consider that plug-in effects have inherent latencies that add up with the PC I/O latency. So, make sure that there are no adverse effects when applying outboard processing. The internal latencies of the console are typically 10-15 times less than the the latency introduced by external processing.

  Please also note that in both cases, you need to adjust the physical preamp parameters, Gain and Phantom power, from the 'Setup/preamps' page on the console. See details in Chapter 6.

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5.12 Remote control

The X32 RACK hosts an Ethernet port on its rear panel which can be used to connect and remote control it over a network via the X32-Mix on an iPad or the X32-Edit application on a PC. To be able to do this the X32 RACK has to be set up properly.

- Press the SETUP button next to the screen.
- Go to the Network tab.
- Use encoder 1 to choose between IP address, Subnet mask and Gateway. Adjust the address fields with the encoders 2-5 and assign the selected numbers with encoder #6.
- Set an IP address which fits your network, normally 192.168.0.X. The IP address should be free within the network.
- Set your subnet mask according to your network, normally 255.255.255.0
- Set your gateway, if required.

Now get your iPad or remote PC into the same network and open the X32-Edit.

PC:

- On the X32-Edit, choose setup on the right side and the network tab. Enter the IP address of the X32 in the network and press connect.
- If the software has connected to the X32 you can also synchronize them in 2 directions. Console -> PC means all settings in the X32 will be loaded into the X32-Edit. PC -> Console means that all settings in the X32-Edit will be written to the console.

X32-Mix

- For the X32-Mix remote, open the program on your iPad (make sure the iPad is connected to the same network as the console).
- On the startup screen, a popup should appear. Enter the IP of the console, press “Go Online”, et voilà: you are connected and can control the X32 RACK with your iPad.

5.13 Recording a 2-track directly with the console

The X32 RACK offers the possibility to record a 2-track of your mix (or any other selection of signals) directly onto a USB-stick/external USB hard disk:

- Plug a FAT-formatted (FAT12, FAT16, FAT32) USB stick into the USB port on the front panel.
- Press the USB button above the USB port and the home screen of the recorder will show up with a nice emulation of an old tape deck.
- On the config tab you can select the source for the recording, default is main L and R.
- Press RECORD (encoder #5) to record your mix.
- To adjust the volume during playback, use the Channel Select knob to select A7 to adjust the left and right channels. The stereo channels are linked by default, so adjusting A7 (left) will automatically affect the right channel as well.

Remarks:

Due to the FAT format of the stick, the file size will be limited to 2 GB, which is about 3 hours of stereo recording. Please test the recording capability of your USB device before you do the “real stuff” as some sticks may not be supported or be too slow. We also recommend you defragment your USB device prior to recording. The recording will be done as 16-bit WAV file with the selected sample frequency of the console.

Please also note that it is possible that the specifications of USB storage devices may be changed by the manufacturer without any change in physical appearance or notification.

5.14 Saving and recalling scenes

Follow the steps below to save and recall scenes in the console, allowing different configurations to be recalled at a later time.

- Adjust all settings of the console so that all elements of the mix are as desired.
- Press the Scenes button. The Main Display will show various controls for saving and recalling console scenes.
- Press the rotary control labeled “save” to save the console’s current configuration to the next available empty scene and label it with a custom name.
- Adjust the console to the next desired configuration, and repeat the process above as needed, saving additional scenes to additional empty slots.
- To recall a scene, rotate the first encoder to scroll through the list of saved scenes. A gray box will indicate which item is currently selected.
- When the desired scene is selected with the gray box, press the first encoder and the console will switch to that scene. All console parameters will switch to the state they were in when saved to the scene that was just recalled.

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6. USB Interface Operation Guide

Host system requirements for X-USB interface expansion card

Check the BEHRINGER website at behringer.com for updates of X-USB firmware or system requirements. Please find the recommended hardware/software minimum configurations in the specifications section.

The BEHRINGER X-USB High-Performance 32-Channel 24-Bit USB Audio Interface

The X-USB card provides 32 channel, bi-directional audio I/O via USB 2.0 to Mac or Windows PC. The simultaneous 32-in, 32-out audio channels enable extremely powerful studio and live applications. You can run virtual live sound checks or 32-track high-quality studio recordings, while at the same time remote operating your DAW via HUI/MackieControl emulation. The high speed 24-bit signal transmission and ultra-low latency ASIO drivers and CoreAudio compatibility even allow inserting audio plugins on your PC to perform advanced outboard processing.

Configuration

After the console has fully booted up, you can access the Setup/Card screen to view the current channel count configuration. Depending on your application, you may want to select an option other than the maximum 32 x 32 channel count to preserve system resources.

6.1 Configuring the X-USB card for use in the console

The console will automatically detect the X-USB card during the regular boot cycle, and it will display the card's presence in several instances.

The green square in front of "C: X-USB" indicates that the card is installed and working properly.

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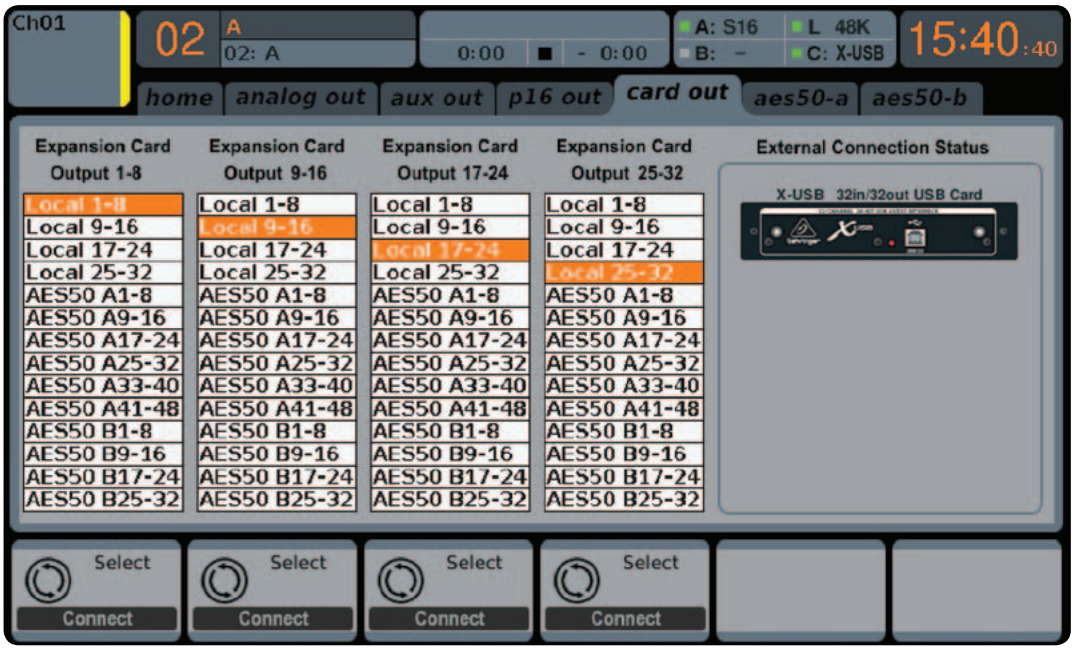
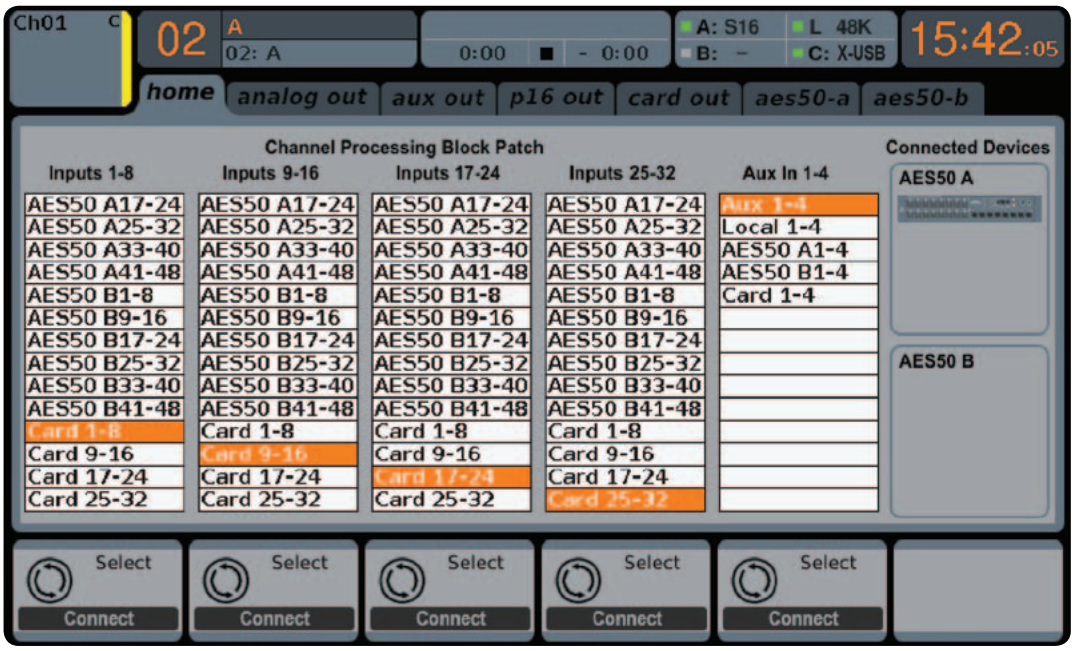
32 in / 32 out

This mode obviously allows the full potential of the interface to be tapped. Note that the computer needs to be able to handle that amount of concurrent I/O stream without any glitches. Depending on its speed and memory configuration, some optimization for audio recording might be required.

It is also possible to run a virtual sound check of all 32 input channels by recording them directly to a computer during a brief line check. The performers can leave the stage while you play back the recorded instruments from the hard drive and tweak the sound accordingly.





Generally, the Card outputs may use any of the available signal sources in the console (local or AES50) for recording independently. When the X32 RACK is used in a quasi in-line mode, the card with connected computer represents a classic tape machine. In this case, the X32 RACK mic inputs would be selected to feed the card outputs (see graphic), and all signals are run from the mixer's preamps directly to the multi-track recording machine (PC) and from there 1:1 back into the console's input channels.

When the console channel inputs are set to Card, the channel Gain control will be a +/- 12 dB digital trim for the interface card signal, without direct access to any head amp - which is great for mixdown but would be an issue for recording. So, mixing and monitoring can be done using the X32 RACK input channel controls, but the actual mic preamps must now be controlled from the Setup/preamps page, which gives remote control to every one of the available preamps in the system. Use the Setup/preamps page to make sure that phantom power is set as needed, and that there is a reasonable amount of headroom for recording the preamp signals.

TIP: Sometimes it is more convenient to run the sound check while the preamps are still connected to the X32 RACK input channels. Once you are confident about the fundamental settings, you can switch the channel inputs to the X-USB Card inputs for laying the tracks and monitoring the DAW outputs.

If you wish to switch back and forth between the two modes more frequently, you could consider storing 2 routing scenes, 'DAW' and 'preamps'. Make sure Scene Safes are set in a way that all other parameters remain unchanged.

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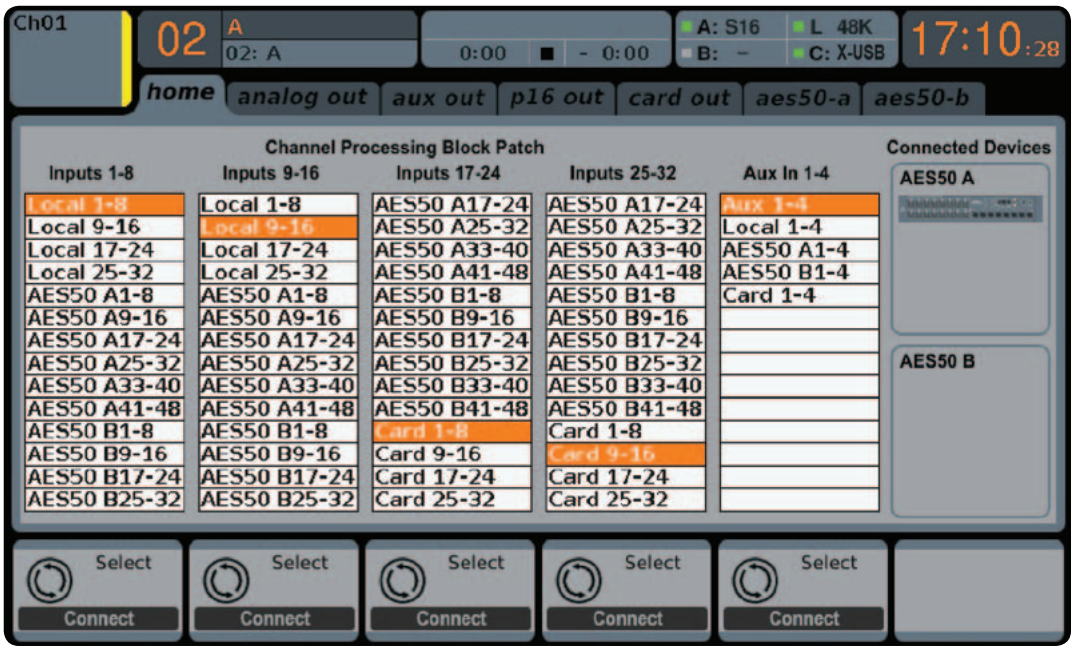
16 in / 16 out

If you don't actually need more than 16 concurrent input and output tracks to be exchanged between the console and your PC, then this mode might be more appropriate for you. First, it will slow the required bandwidth on the interface down. Second, there will be no excessive I/O tracks in your DAW configuration that might clutter your setup. Third, it allows you to run a fully-featured zero-latency overdub setup, which would be impossible if signals were run through the computer. In this case, the 16 input signals are put on channels 1-16, while the tape (card) returns are put on channels 17-32. The monitoring is directly fed from Ch1-16 as usual, including all processing and effects. It remains independent from any computer audio latency, even though you can hear back all the recorded tracks without any repatching.



32 in / 8 out

This mode is tailored to suit a typical studio and overdub recording situation, with many input channels but only a few output channels for monitoring of previously recorded takes.

8 in / 8 out and 2 in / 2 out

For very small recording sessions or overdubs with single sources like vocals, reducing the channel I/O frees up more processing power and ensures stable operation with small latency settings.

8 in / 32 out

This is a useful mode for utilizing the excellent audio engine and effects processing of the console during final mixdown of your project. All 32 tracks would be fed from your DAW into the console where all the magic happens. Then only 2-8 tracks of the complete mixdown would be sent back to the DAW.

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6.2 Configuring the PC to Interface with the X-USB Card

Please watch behringer.com for further advice on the software configuration of X-USB interface card.

Windows: There is an ASIO high-performance driver available for download, which is essential for low-latency audio on Windows computers.

MacOS: The X-USB is CoreAudio compatible and thus works with low-latency on Mac computers without any additional driver installation.

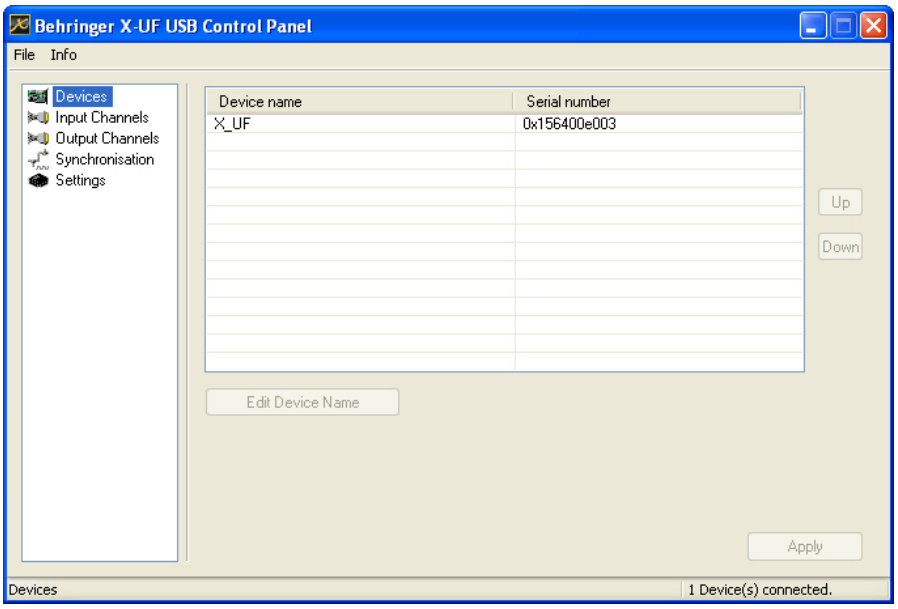
Windows ASIO Driver

Download the X32 ASIO driver installer files from behringer.com. Double-click on Setup.exe in the corresponding unpacked folder and follow the instructions on the screen.

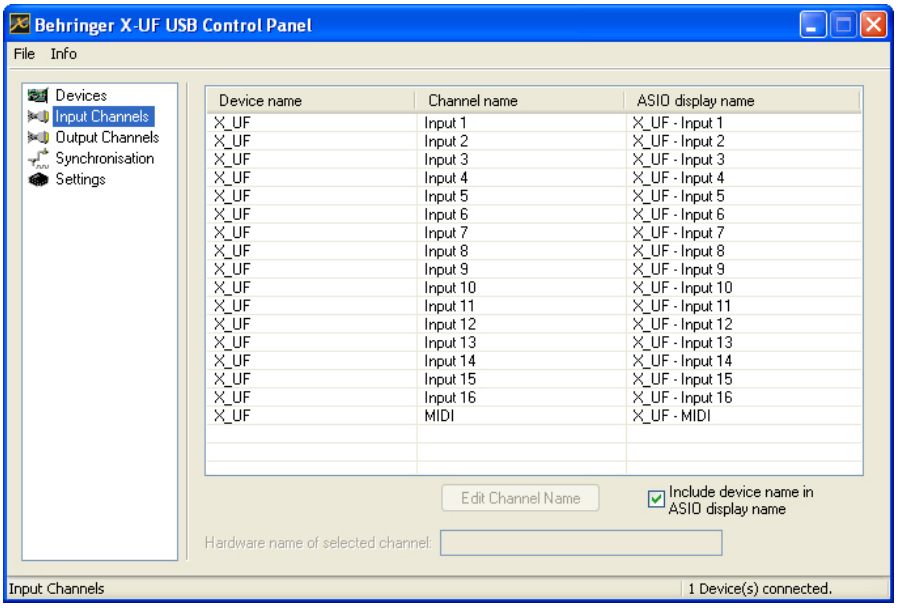
Driver Control Panels

Once the driver is installed, you can open the control panel by double-clicking on the small tray icon. These screens will allow configuring the X-USB expansion card in the X32 RACK as an audio interface for your computer.

The 'Devices' screen displays the card name and serial number. You can rename the card if necessary.



The 'Input Channels' screen allows you to name each input channel for more organized mixing.


Behringer X-UF USB Control Panel
File Info
Devices
Input Channels
Output Channels
Synchronisation
Settings
Device name
Channel name
ASIO display name
X_UF Input 1 X_UF - Input 1
X_UF Input 2 X_UF - Input 2
X_UF Input 3 X_UF - Input 3
X_UF Input 4 X_UF - Input 4
X_UF Input 5 X_UF - Input 5
X_UF Input 6 X_UF - Input 6
X_UF Input 7 X_UF - Input 7
X_UF Input 8 X_UF - Input 8
X_UF Input 9 X_UF - Input 9
X_UF Input 10 X_UF - Input 10
X_UF Input 11 X_UF - Input 11
X_UF Input 12 X_UF - Input 12
X_UF Input 13 X_UF - Input 13
X_UF Input 14 X_UF - Input 14
X_UF Input 15 X_UF - Input 15
X_UF Input 16 X_UF - Input 16
X_UF MIDI X_UF - MIDI
Edit Channel Name
Include device name in ASIO display name
Hardware name of selected channel:
Input Channels
1 Device(s) connected.

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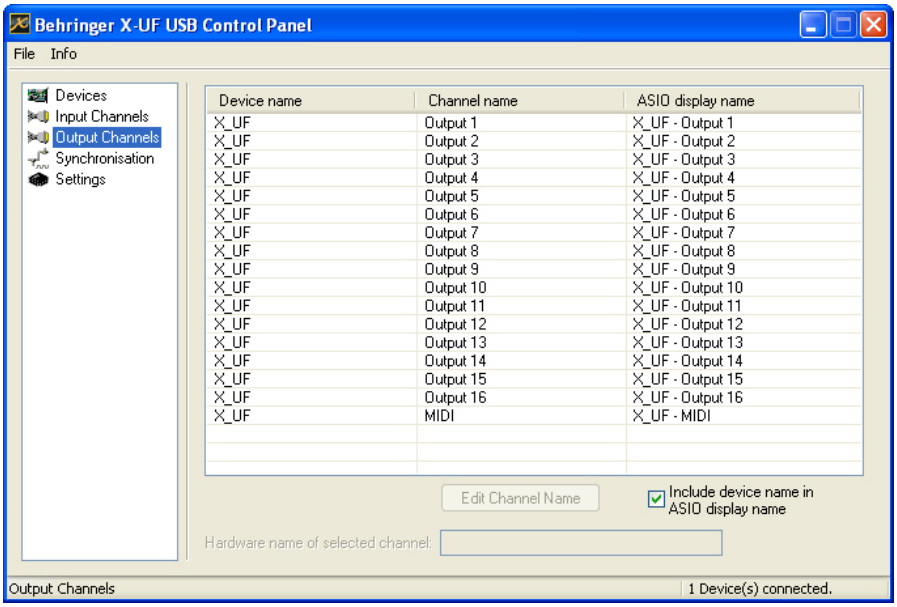
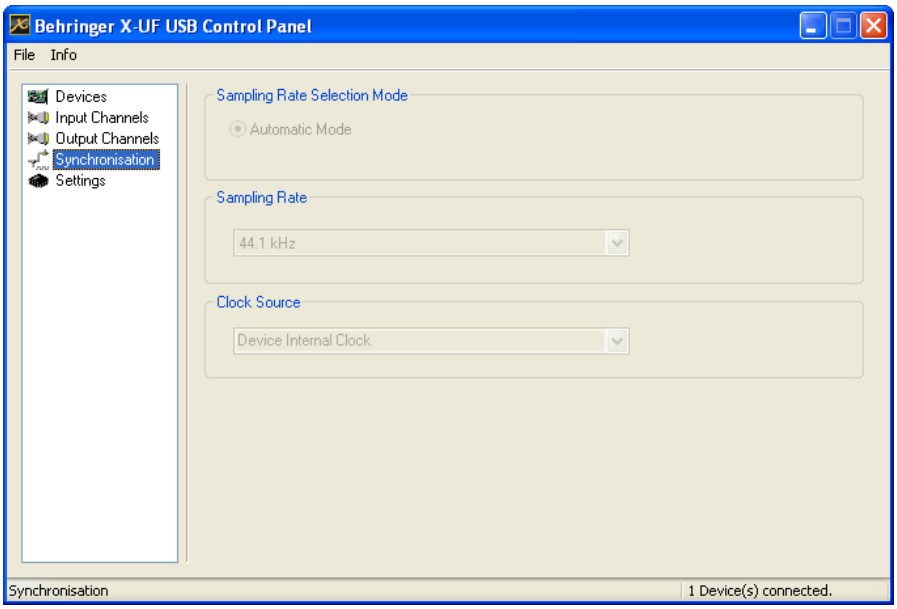
The 'Output Channels' screen allows you to name each output channel for more organized mixing.


Behringer X-UF USB Control Panel
File Info
Devices
Input Channels
Output Channels
Synchronisation
Settings
Device name
Channel name
ASIO display name
X_UF Output 1 X_UF - Output 1
X_UF Output 2 X_UF - Output 2
X_UF Output 3 X_UF - Output 3
X_UF Output 4 X_UF - Output 4
X_UF Output 5 X_UF - Output 5
X_UF Output 6 X_UF - Output 6
X_UF Output 7 X_UF - Output 7
X_UF Output 8 X_UF - Output 8
X_UF Output 9 X_UF - Output 9
X_UF Output 10 X_UF - Output 10
X_UF Output 11 X_UF - Output 11
X_UF Output 12 X_UF - Output 12
X_UF Output 13 X_UF - Output 13
X_UF Output 14 X_UF - Output 14
X_UF Output 15 X_UF - Output 15
X_UF Output 16 X_UF - Output 16
X_UF MIDI X_UF - MIDI
Edit Channel Name
Include device name in ASIO display name
Hardware name of selected channel:
Output Channels
1 Device(s) connected.

The 'Synchronisation' screen allows manual selection of the sample rate and clock source.



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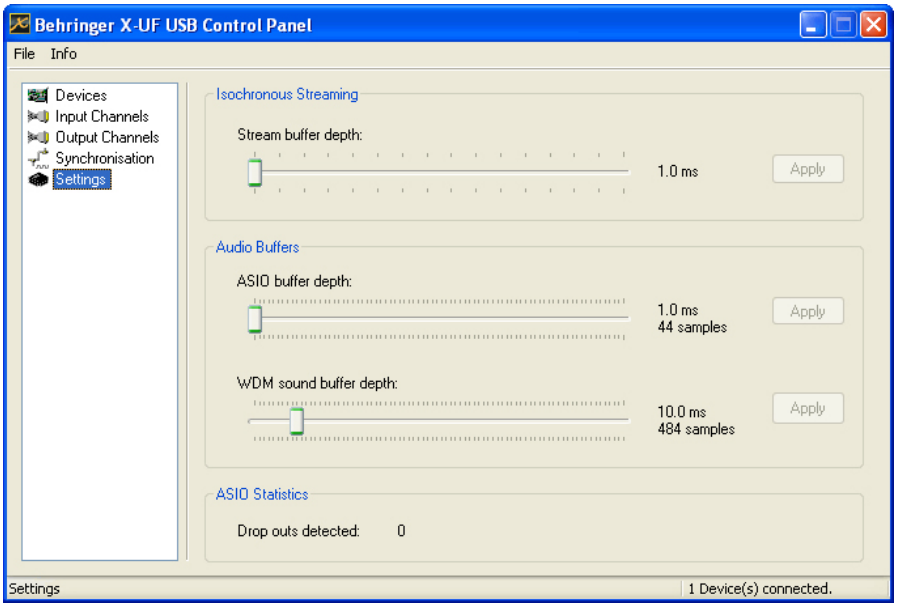
The 'Settings' screen allows the stream, ASIO, and WDM sound buffers to be set. Any detected drop outs will be documented as well, in which case a larger buffer should be selected.



6.3 X-USB Specifications

Expansion Card Features:			
Interface	**MIDI**	**Audio input channels 24-Bit, 44.1/48 kHz**	**Audio output channels 24-Bit, 44.1/48 kHz**
HighSpeed USB 2.0	1 in x 1 out	32, 16, 8 or 2	32, 16, 8 or 2
DAW remote control	Generic, HUI and Mackie Control emulation		

Expansion Card Performance:	
Interface	**Typical round-trip latency**
HighSpeed USB 2.0	~14 ms

* depends on system performance and application

Recommended Minimum Hardware:

Windows PC - Core 2 Duo CPU, 2 GHz
- USB 2.0 port
- 1 GB RAM

Mac - 1.5 GHz CPU
- USB 2.0 port
- 512 MB RAM

Recommended Operating Systems:

Windows: XP 32-Bit SP2 or higher, Win7 32-bit, Win7 64-bit, Win8 64-bit (X-USB ASIO drivers supplied)

MacOSX: 10.5 Leopard, 10.6 Snow Leopard, 10.7 Lion, 10.8 Mountain Lion (CoreAudio compatible)

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7. Main Display

7.1 Overview

7.1.1 Display and Navigation Controls

The controls in this section are used in conjunction with the color screen, in order to navigate and control the graphical elements it contains.

By including dedicated rotary controllers that correspond to adjacent controls on the screen, as well as including cursor buttons, the user can quickly navigate and control all of the color screen's elements.

Color Screen: This color screen contains various displays that give visual feedback for the operation of the console, and also allow the user to make various adjustments not provided for by the dedicated hardware controls.

Rotary Encoders: These six rotary encoders are used to adjust various color screen elements located directly above them. Each of the six rotary encoders can be pushed inward to activate a button press function. This function is useful when controlling color screen elements that have a dual "on/off" type state that is best controlled by a button, as opposed to a variable state that is best adjusted by a rotary control.

Screen selection buttons: These 10 illuminated buttons allow the user to immediately navigate to any of 10 master screens that address different sections of the console. The 10 sections that can be navigated to with these buttons are:

1. Home
2. Meters
3. Routing
4. Library
5. Effects
6. Setup
7. Monitor
8. Scenes
9. Mute Group
10. Utility

Page Select Buttons: These two buttons allow for left-right navigation among the different "pages" contained within a screen set. A graphical tab display shows which page you are currently on.

Layer Up/Down Buttons: On some screens, there are more parameters present than can be adjusted by the 6 encoders underneath. In these cases, use the layer up/down buttons to navigate through any additional layers contained on the screen page.

L/R Meter: This dual 24-segment meter displays the audio signal level output from the main bus of the console.

M/C SOLO Meter: This 24-segment meter displays the audio signal level output from the mono bus of the console. When one or more channels are currently soloed, the meter switches to displaying the level of the currently soloed signal(s).

7.1.2 Console Screens

The color screen of the X32 RACK offers a wealth of visual feedback and hands on control for the console. Whereas the dedicated front panel controls offer immediate hands-on adjustments for the most important operations of a channel, the color screens offer similarly immediate visual feedback for a selected channel, as well as more global areas of the console.

The screens are divided into three main areas:

1. Global Screen Elements
2. Main Display
3. Rotary Encoder Elements

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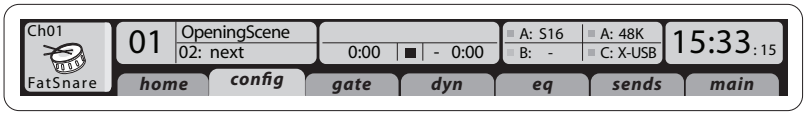
Global Screen Elements



The "global" screen elements are located at the top of the screen, laid out in a horizontal row. They always remain visible no matter what specific screen the user has currently navigated to, because they displays console parameters that are always important to keep in view at all times.

These screen elements include, from left to right:

Channel Indicator: Displays various elements of the currently selected, including:

1. The number of the specific input or output channel that is currently selected
2. The custom channel name (if one has been assigned)
3. Channel color (if one has been assigned)
4. Channel icon (if one has been assigned)

Show Indicator: This number, presented in a large orange colored font, displays the currently loaded show.

Scene Name/Number: Thus number, displayed in a smaller black colored font, indicates the number of the currently loaded scene.

USB Recorder File: Displays the name of the active file that is currently being recorded or played back.

AES50-A: Displays, by name, what AES50 based equipment is connected to the console's AES50-A port. The green LED lights solid when a valid AES50 connection is present.

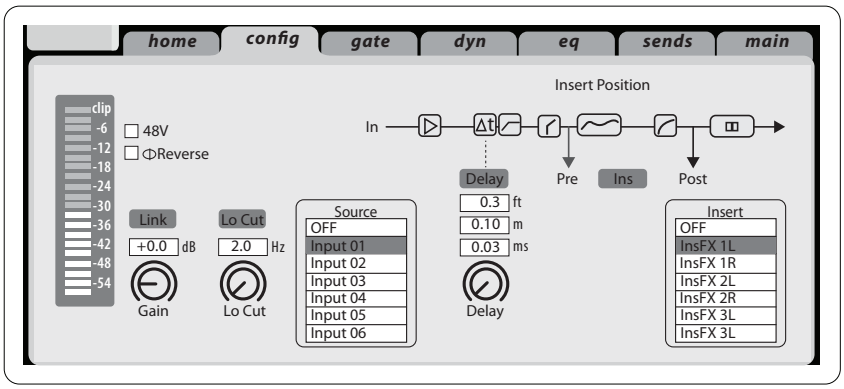
AES50-B: Displays, by name, what AES50 based equipment is connected to the console's AES50-B port. The green LED lights solid when a valid AES50 connection is present.

Word Clock/Sample Rate Indicator:

1. Displays the current sample rate of the console.
2. The green LED illuminates when a valid internal or external clock is present.
3. Displays the current source of the clock:
   - L: Internal Clock
   - A: AES50 port A
   - B: AES50 port B
   - C: X-USB

Clock: Displays the current time of day in hours:minutes:seconds.

Main Content



The main content of the screen is displayed in the middle of the screen and is divided up into different sections of information, depending on the specific screen being shown at any given time.

Information shown in the main content portion of the screen consists of two types:

1. Display-only content: This type of content is a visual indication only and cannot be adjusted by the user. An example would be the graphical response curve of an equalizer or the response graph of a compressor.
2. Adjustable content: Content that displays an adjustable parameter, controlled by a dedicated top-panel control. For example, the "home" tab of the "home" screen displays a knob graphic for input gain (trim). This control is adjustable by turning the dedicated "gain" control on the top panel of the console, in the Channel Strip section of the top panel.

The most important information for any screen category will be located on its "home" page. However, most screens contain alternate pages of information that are also useful. They are represented by different "tabs" that can be seen towards the top of the screen. Each tab is named to describe the functions it represents. Navigate to these alternate tabs by pressing the Page Select left and right keys.

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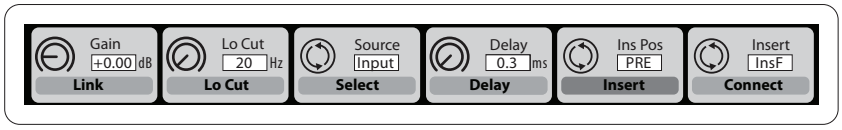
Rotary Encoder Elements:



The bottom of most screens contain 6 slots of information that are always paired with the 6 hardware rotary encoders located directly underneath each slot. The hardware encoders are used to adjust parameters displayed in these slots, and operate in the following manner:

1. Parameters displayed in the top half of each slot are most often "continuous" type parameters, and are adjusted by rotating the corresponding encoder located directly below the bottom of the screen.
    - For example, in the "home" tab of the Home screen, the "gain" parameter of the selected input (located in slot 1) is adjusted with the first encoder.
2. Parameters displayed in the bottom half of each slot (outlined in dark grey) are most often "on/off" style parameters, and are adjusted by pushing the encoder inward, using it as a button.
    - For example, in the "home" tab of the Home screen, the "link" parameter of the selected input (located in slot 1) is adjusted with the first encoder's push action.
3. If a given screen contains more parameters than fits into the 6 slots, then a 2nd set of slots is made available. Navigate to the next set of slots by pressing the Layer down key, and the bottom-of-screen content will change to display the next set of 12 parameters to be adjusted. Press the Layer up key to return to the original set of 12 parameters.

7.1.3 Navigation Methods

Following is an overview of how to navigate to the different console screens, screen tabs, and sets of encoder parameters.

1. Press any of the 10 hardware buttons located on either side of the main display screen.
2. On any given screen, press the Page Select left/right keys to navigate among the various screen "tabs" within a screen category.
3. On any given screen, press the Layer up/down keys to navigate among the various sets of encoder parameters located at the bottom of each screen.

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7.2 Home Screen

The home screen contains a high-level overview of the selected input or output channel, and offers various adjustments not available through the dedicated top-panel controls:

The home screen contains the following separate tabs:

1. Home: General signal path for the selected input or output channel
2. Config: Allows selection of signal source/destination for the channel, configuration of insert point, and other settings
3. Gate: Controls and displays the channel gate effect beyond those offered by the dedicated top panel controls
4. Dynamics: Controls and displays the channel dynamics effect (compressor) beyond those offered by the dedicated top panel controls
5. EQ: Controls and displays the channel equalizer effect beyond those offered by the dedicated top panel controls
6. Sends: Controls and displays for channel sends, such as sends metering and send muting
7. Main: Controls and displays for the selected channel's output

7.2.1 Home Screen: Home Tab

The home tab of the home screen displays a general signal path for the currently selected input or output channel. It visually displays various parameters of the input, gate, insert point, equalizer, dynamics, output path, and buses.

The home tab contains the following parameters (divided into two pages) that can be adjusted using the six rotary-push encoders.

Page 1

1. Adjust the 1st encoder to control the input gain (trim) of the channel.
2. Tap the 1st encoder to link the channel with its adjacent channel.
3. Adjust the 2nd encoder to set the threshold of the channel noise gate.
4. Tap the 2nd encoder to toggle the channel noise gate in/out of the signal path.
5. Adjust the 3rd encoder to toggle the channel's insert point between pre-fader and post-fader status.
6. Tap the 3rd encoder to toggle the channel insert in/out of the signal path.
7. Adjust the 4th encoder to toggle the channel dynamics between pre-EQ and post-EQ status.
8. Tap the 4th encoder to toggle the channel EQ in/out of the signal path.
9. Adjust the 5th encoder to set the threshold of the channel compressor.
10. Tap the 5th encoder to toggle the channel compressor in/out of the signal path.
11. Adjust the 6th encoder to pan the selected channel within the main stereo output.
12. Tap the 6th encoder to assign the selected channel to the main stereo output.

Page 2

1. Adjust the 1st encoder to select the console channel currently controlled by the home screen.
2. Tap the 1st encoder to toggle +48V phantom power on/off for the currently selected input.
3. Tap the 2nd encoder to toggle phase flip on/off for the currently selected channel.
4. Adjust the 3rd encoder to select which of the 8 DCA groups the currently selected channel will be assigned to.
5. Tap the 3rd encoder to assign the currently selected channel to the selected DCA group.
6. Adjust the 4th encoder to select which of the 6 mute groups to assign the currently selected channel to.
7. Tap the 4th encoder to assign the currently selected channel to the selected mute group.
8. Tap the 5th encoder to toggles solo on/off for the currently selected channel.
9. Adjust the 6th encoder to adjust the fader level for the currently selected channel.
10. Tap the 6th encoder to toggle mute on/off for the currently selected channel.

7.2.2 Home Screen: Config Tab

The configuration tab allows selection of signal source/destination for the channel, configuration of insert point, and other settings, as well as configuration of the channel delay.

The config tab contains the following parameters that can be adjusted using the six rotary-push encoders:

1. Adjust the 1st encoder to control the input gain (trim) of the channel.
2. Tap the 1st encoder to allow linking of the channel with adjacent channel.
3. Adjust the 2nd encoder to set the low-cut frequency of the channel.
4. Tap the 2nd encoder to toggle the low-cut filter in/out of the signal path.
5. Adjust the 3rd encoder to scroll among all of the possible sources for the channel.
6. Tap the 3rd encoder to select the currently highlighted source and assign it to the channel.
7. Adjust the 4th encoder to set the amount of digital line delay applied to the channel.

*Note – this is not an echo effect

8. Tap the 4th encoder to toggle the delay in/out of the signal path.
9. Adjust the 5th encoder to toggle the channel insert between pre and post EQ/compressor.
10. Tap the 5th encoder to toggle the channel insert in/out of the signal path.
11. Adjust the 6th encoder to scroll among the signal path choices for the insert point.
12. Tap the 6th encoder to assign the selected signal path to the insert point.

7.2.3 Home Screen: Gate Tab

The gate tab contains the following parameters, divided among two pages, that can be adjusted using the six rotary-push encoders:

Page 1

1. Adjust the 1st encoder to set the input threshold of the gate.
2. Tap the 1st encoder to toggle the noise gate in/out of the signal path.
3. Adjust the 2nd encoder to set the range of a "ducking" effect applied to the channel.
4. Tap the 2nd encoder to toggle the ducker effect in/out of the signal path.
5. Adjust the 3rd encoder to set the attack time of the onset of the noise gate effect.
6. Adjust the 4th encoder to set the hold time of the noise gate effect.
7. Adjust the 5th encoder to set the release time of the noise gate, controlling how quickly the gate opens up and lets the signal through.

Page 2

1. Encoders 1 and 2 function the same on pages 1 and 2.
2. Adjust the 4th encoder to set the frequency of the key filter that can be used to trigger the noise gate.
3. Tap the 4th encoder to toggle the key filter on/off, allowing a specific frequency to control the gate.
4. Adjust the 5th encoder to set the steepness of the EQ slope used in the key filter.
5. Tap the 5th encoder to send the key source to the solo bus, allowing the key source to be monitored and evaluated.
6. Adjust the 6th encoder to select the specific key source to be used. Choices include "self" (the channel's own signal) as well as any other input/output of the console.
7. Tap the 6th encoder to assign the selected key source to the gate.

7.2.4 Home Screen: Dynamics Tab

The dynamics tab contains the following parameters that can be adjusted using the six rotary-push encoders:

Page 1

1. Adjust the 1st encoder to set the input threshold of the compressor.
2. Tap the 1st encoder to toggle the compressor in/out of the signal path.
3. Adjust the 2nd encoder to set the ratio of the compressor.
4. Tap the 2nd encoder to switch the channel dynamics effect between compression and expansion.
5. Adjust the 3rd encoder to set the attack time of the compressor effect.
6. Tap the 3rd encoder to switch the compressor between Peak and RMS (root-mean-squared) mode, where the average level of the signal is evaluated more than any specific peak of the channel material.
   - PEAK: A peak sensing compressor responds to the instantaneous level of the input signal. While providing tighter peak control, peak sensing might yield very quick changes in gain reduction, more evident compression, or sometimes even distortion. This mode is very suitable for control/limiting of dynamic material.
   - RMS: In this mode, the compressor applies an averaging function on the input signal before its level is compared to the threshold. This allows a more relaxed compression that also more closely relates to our perception of loudness. Sharp dynamic transients will be less affected in this mode. This mode is good for controlling levels in a mix.
7. Adjust the 4th encoder to adjust the "hold" time of the compressor.
   - "Hold" time is a parameter not often found on commercial units, but is very handy. If a compressor is set to use a very fast attack/release time, audible distortion can occur, because the compressor is trying to work on individual waveform cycles of the signal instead of sound envelope as a whole. The "hold" parameter works around this issue by providing a short delay. This delay prevents the compressor from releasing until a certain time has passed.
8. Tap the 4th encoder to switch between Linear and Logarithmic modes for the compressor. Following are some brief definitions of these different modes:
   - LOG: This mode is used in many well-respected compressors and is the natural result of more recent analogue units employing logarithmic side chains and resistor/capacitor time constants. The exponential/dB law has some interesting characteristics. Firstly, the time taken to complete a compression event tends to stay the same however large the dynamic signal excursion is. Also, since the peak rate of gain change increases with dynamic excursion, the resulting harmonic content due to compression tends to follow the loudness of the program in a way the ear expects. This helps to mask the effects of the compression and thus provides the most forgiving solution, being tolerant to differing timing settings and program material. This makes it the best choice for general compression use and overall dynamic control of complex musical program.

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- Linear: In this mode, the rate of gain change is constant (as set by the timing controls). Therefore, the greater the signal dynamic excursion, the longer the compressor will take to complete a gain change. Also, since the total time that the compressor spends in attack or decay is proportional to the size of the gain excursion, the harmonic content of the compression artifacts will seem to reduce in frequency content. The louder the signal excursion is. This type of compressor is useful for generating dynamic sound effects because the sonic character of the compression is much more affected by time control settings and program material than the exponential type.

9. Adjust the 5th encoder to set the release time of the compressor.
10. Adjust the 6th encoder to set the makeup gain of the compressor, useful when the compression effect has reduced the overall signal level of the channel too much.

Page 2

1. Encoders 1 and 2 function the same on pages 1 and 2.
2. Adjust the 3rd encoder to set the steepness of the compressor "knee" between five separate settings. Adjust this control to switch between a "harder" sounding or more transparent compression effect.
3. Tap the 3rd encoder to move the compressor effect before or after the equalizer in the channel signal path.
4. Adjust the 4th encoder to set the frequency of the key filter that can be used to trigger the compressor.
5. Tap the 4th encoder to toggle the key filter on/off, allowing a specific frequency to control the compressor.
6. Adjust the 5th encoder to set the steepness of the EQ slope used in the compressor.
7. Tap the 5th encoder to send the key source to the solo bus, allowing the key source to be monitored and evaluated.
8. Adjust the 6th encoder to select the specific key source to be used. Choices include "self" (the channel's own signal) as well as any other input/output of the console.
9. Tap the 6th encoder to assign the selected key source to the compressor.

7.2.5 Home Screen: EQ Tab

The EQ tab displays all aspects of the channel equalizer and also displays a detailed visual graph of the current EQ curve.

1. If the currently selected channel is an input, the channel equalizer contains four bands, with various aspects of each band adjusted by encoders 2-5.
2. If the currently selected channel is a bus, the channel equalizer contains six bands, with various aspects of each band adjusted by encoders 1-6.
3. On the equalizer screen, the various encoders are always tied to the various equalizer bands, and the Layer up/down keys are used to toggle whether the four/six encoders adjust:
   - Gain
   - Frequency
   - Q (Bandwidth)
   - Equalizer Mode

Page 1 (Gain)

1. Adjust the 1st encoder to set the frequency of the channel low-cut filter.
2. Tap the 1st encoder to toggle the low-cut filter in/out of the signal path.
3. Adjust the 2nd encoder to boost/cut the gain of the low band.
4. Adjust the 3rd encoder to boost/cut the gain of the low-mid band.
5. Adjust the 4th encoder to boost/cut the gain of the high-mid band.
6. Adjust the 5th encoder to boost/cut the gain of the high band.
7. Tap the 6th encoder to toggle the EQ in/out of the signal path.

Page 2 (Frequency)

1. Works as above, but the encoders now adjust the frequency center points for the different EQ bands.

Page 3 (Q)

1. Works as above, but the encoders now adjust the Q (bandwidth) for the different EQ bands. Use a narrow slope for working with a specific frequency, or use a more broad slope for general tone shaping.

Page 4 (Mode)

1. **Mode**: Works as above, but the encoders now adjusts the EQ mode for each EQ band. Choices include:
   - Low Cut
   - Low Shelf
   - Parametric Equalizer
   - VEQ
   - High Shelf
   - High Cut

2. The LOW and HIGH EQ bands available in the six matrices allow selection of additional Modes for filtering, especially in crossover applications: BU (Butterworth), BS (Bessel) or LR (Linkwitz-Riley) with 6, 12, 18 or 24 dB slopes. When one of these is active, the adjacent LOW2 or HIGH2 bands are not available.

7.2.6 Home Screen: Sends Tab

The sends tab contains the following parameters that can be adjusted using the six rotary-push encoders:

Page 1

1. Adjust the 1st encoder to set the level for the first send of the currently selected four-send group.
2. Tap the 1st encoder to mute the first send of the currently selected four-send group.
3. Repeat process with the next three encoders for the other three sends in the currently selected four-send group.
4. Adjust the 6th encoder to select which four sends to control with the screen encoders, shifting focus two sends at a time.
5. Tap the 6th encoder to select which four sends to control with the screen encoders, shifting focus four sends at a time.

Page 2

1. Adjust the 1st encoder to select where in the signal chain the send is tapped from, for the first two sends of the currently focused four sends. Options include:
    - Pre-EQ
    - Post-EQ
    - Pre-Fader
    - Post-Fader
    - Sub-Group
2. Adjust the 3rd encoder to perform the same operation for the second two sends of the currently focused four sends.
3. Adjust the 6th encoder to select which four sends to control with the screen encoders, shifting focus two sends at a time.
4. Tap the 6th encoder to select which four sends to control with the screen encoders, shifting focus four sends at a time.

7.2.7 Home Screen: Main Tab

The main tab displays and controls all aspects of the main bus assignments.

The main tab contains the following parameters that can be adjusted using the six rotary-push encoders:

1. Adjust the 1st encoder to pan the selected channel within the main stereo output.
2. Tap the 1st encoder to assign the selected channel to the main stereo output.
3. Adjust the 2nd encoder to adjust the level of the currently selected channel within the mono (center) bus.
4. Tap the 2nd encoder to assign the selected channel to the mono output signal path. Use this function when crafting an LCR mix as opposed to a mono or stereo mix.
5. Tap the 5th encoder to solo/unsolo the currently selected channel.
6. Adjust the 6th encoder to set the fader level for the currently selected channel.
7. Tap the 6th encoder to mute/unmute the currently selected channel.

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7.3 Meters Screen

The meters screen displays different groups of level meters for various signal paths of the console, and is useful for quickly ascertaining if any channels need level adjustment. Since there are no parameters to adjust for the metering displays, none of the metering screens contain any "bottom-of-screen" controls that would normally be adjusted by the 6 rotary encoders.

The meter screen contains the following separate screen tabs, each containing level meters for the following signal paths:

1. Channel:
    - Level meters and fader levels for the 32 input channels
    - Gate response meters for the 16 input channels
    - Gain reduction meters for the 16 input channels
2. Mix Bus:
    - Level meters, fader levels, and gain reduction meters for the 16 bus masters
    - Level meters, fader levels, and gain reduction meters for the 6 matrix outputs
    - Level meters, fader levels, and gain reduction meters for the stereo main bus and the mono bus
3. Aux/FX:
    - Level meters for the 6 auxiliary sends
    - Level meters and fader levels for the 8 auxiliary returns
    - Level meters and fader levels for the 4 stereo effects returns
4. In/Out:
    - The 32 input channels
    - The 8 auxiliary returns
    - The 6 auxiliary sends
    - The two rear panel digital outputs
    - Monitor outputs
    - The 16 rear panel analog outputs
    - The P16 Ultranet outputs

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7.4 Routing Screen

The routing screen is where all signal patching is done, allowing you to route internal signal paths to and from the physical input/output connectors located on the console's rear panel.

The routing screen contains the following separate tabs:

1. Home: Allows patching of physical inputs to the 16 input channels and Aux inputs of the console.
2. Analog Out: Allows patching of internal signal paths to the console's 8 rear-panel XLR outputs.
3. Aux Out: Allows patching of internal signal paths to the console's 6 rear-panel ¼"/RCA auxiliary outputs.
4. P16 Out: Allows patching of internal signal paths to the 16 outputs of the console's 16-channel P16 Ultranet output.
5. Card Out: Allows patching of internal signal paths to the 32 outputs of the X-USB card.
6. AES50-A: Allows patching of internal signal paths to the 48 outputs of the rear panel AES50-A output.
7. AES50-B: Allows patching of internal signal paths to the 48 outputs of the rear panel AES50-B output.

None of the routing screen's tabs contains a secondary level of encoder functions. When routing audio, the Layer up/down keys do not need to be used.

7.4.1 Routing Screen: Home Tab

The routing screen's home tab allows the user to patch the console's physical rear-panel inputs to the 16 input channels and Aux inputs of the console.

As a default, the console maps the console's 16 rear-panel analog inputs to their the respective 16 channel inputs that are accessed on input fader layers one and two, and maps the rear panel line-level (auxiliary) inputs to the third input fader layer.

However, the home tab of the routing screen can be used to change this default assignment and "crosspatch" different physical inputs to different channel inputs, in banks of 8 channels at a time. This allows the user to create a custom layout of channel inputs that differs from the order that the sources are plugged into the rear panel, and is easier than physically re-patching physical audio cables.

To assign various inputs to the console's input channels, perform the following steps:

1. Adjust the first rotary encoder to select which 8-channel audio input source feeds input channels 1-8 of the console. As the encoder is rotated, the currently selected input will be highlighted in the vertical list of choices.
2. When the desired 8-channel source is selected, push the 1st encoder to "connect" the currently selected 8-channel source. The selected source now feeds input channels 1-8 of the console.
3. Input choices that can be assigned include:
    - Local 1-8
    - Local 9-16
    - AES50-A 1-8
    - AES50-A 9-16
    - AES50-A 17-24
    - AES50-A 25-32
    - AES50-A 33-40
    - AES50-A 41-48
    - AES50-B 1-8
    - AES50-B 9-16
    - AES50-B 17-24
    - AES50-B 25-32
    - AES50-B 33-40
    - AES50-B 41-48
    - Card 1-8
    - Card 9-16
    - Card 17-24
    - Card 25-32
4. To assign an 8-channel source for the other input channels of the console (9-16, 17-24, 25-32), simply repeat the process above, using the other four rotary encoders on the same screen.
5. Choices for Aux In 1-4 include:
    - Aux 1-4
    - Local 1-4
    - AES50-A 1-4
    - AES50-B 1-4
    - Card 1-4

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7.4.2 Routing Screen: Analog Out Tab

The routing screen's analog out tab allows the user to patch the console's various internal signal paths to the 8 analog XLR outputs that are located on the console rear panel.

The X32 console allows for many different kinds of output signal paths, and this screen is where these output paths are assigned to an actual physical rear panel output so that the signal path can be patched to their eventual destination (such as the front-of-house PA speakers or a powered stage monitor).

To assign the various output paths to the rear panel XLR outputs, perform the following steps:

1. Adjust the 1st encoder to select which of the 8 rear panel analog outs you wish to assign an output signal path to.
2. Adjust the 3rd encoder to select an output path "category". These categories include:
    - Off
    - Main (LRC) Mix
    - Mix Bus Outputs
    - Matrix Outputs
    - Direct Outs
    - Monitor
3. Adjust the 4th encoder to select a specific output path, including:
    - Off
    - Main L
    - Main R
    - Main C/M
    - Any of the 16 Mix Outputs
    - Any of the 6 matrix outputs
    - Any of the 32 direct outputs
    - Any of the 8 Auxiliary Outputs
    - Any of the FX Direct Outputs
    - Monitor L
    - Monitor R
    - Talkback
4. Tap the 4th encoder to assign the selected output path, completing the process.
5. Adjust the 5th encoder to select the signal tap point for the output assignment. This determines where in the audio signal path the source is "tapped" as it is sent to the physical rear panel output. The available signal tap points include:
    - Input
    - Pre-EQ
    - Pre-Fader
    - Post-Fader
6. Tap the 5th encoder to assign the selected signal tap point.
7. Adjust the 6th encoder to adjust the amount of digital line delay applied to the output path as it is sent to the rear-panel physical output. As the amount of delay is adjusted, the current delay time is displayed in three different units of measurement: Feet, Meters, and Milliseconds.
8. Tap the 6th encoder to toggle delay on/off. The "delay" label illuminates when the delay is inserted into the signal path.

TIP: Applying a delay to an output signal is typically done when the console is used in a "multi-zone" P.A. speaker setup, where some PA speakers are located near the stage and a second set of speakers are located further back within the audience. By applying an appropriate amount of delay only to the speakers located near the stage, the audience hears the audio from the closer/further speakers at the same time, insuring maximum time-alignment and sound quality. The console assumes an operating temperature of 20°C/68°F when calculating the delay times.

7.4.3 Routing Screen: Aux Out Tab

The route screen's aux out tab allows the user to patch an internal signal path (such as a mix output used as an effects send) to the 6 separate ¼"/RCA auxiliary outputs.

Since these six outputs can have a wide variety of signal paths assigned to them, they can be used for a wide variety of tasks, such as:

1. Feeding an external effects processor when the internal effects are insufficient
2. Patching a specific console signal path into an outboard recorder
3. Feeding the analog or digital audio inputs of a nearby video recorder

To make an assignment as described above, perform the following steps:

4. Adjust the 1st encoder to select which auxiliary outputs to assign a source for. Choices include:
    - Aux Out 1
    - Aux Out 2
    - Aux Out 3
    - Aux Out 4
    - Aux Out 5
    - Aux Out 6
    - AES/EBU (Digital) Out L
    - AES/EBU (Digital) Out R
5. Adjust the 3rd encoder to select for coarse range
    - Insert
    - Main (LRC)
    - Mix Bus
    - Matrix
    - Direct Out
    - Monitor
6. Adjust 4th encoder to select specific signal path to feed the selected physical output. Choices include:
    - Insert Point
    - Main L
    - Main R
    - Main C/M
    - Any of the 16 Mix Outputs
    - Any of the 6 matrix outputs
    - Any of the 32 direct outputs
    - Any of the 8 Auxiliary Outputs
    - Any of the FX Direct Outputs
    - Monitor L
    - Monitor R
    - Talkback
7. Tap the 4th encoder to assign the selected output path, completing the process.
8. Adjust the 5th encoder to select the signal tap point for the output assignment. Choices include:
    - Input
    - Pre-EQ
    - Pre-Fader
    - Post-Fader
9. Tap the 5th encoder to complete the signal tap point assignment.

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7.4.4 Routing Screen: P16 Tab

The routing screen's P16 tab allows the user to route various console signal paths to the rear panel P16 Ultranet output. The Ultranet output allows for 16 channels of audio to be sent, in digital form, to various accessories such as a personal monitoring distribution box.

Using the P16 routing screen, the user can configure the P16 output to carry not only the main LR mix, but also various audio "stems" of program material sources from a bus send mix, such as a stereo drum mix, stereo keyboards, guitars, bass, vocals, etc. Musicians on stage would then be free to each craft their own personal mix of these musical stems, all delivered from the FOH position to stage over a single Ethernet cable.

To select which audio signals are sent to the P16 bus, perform the following steps:

1. Adjust the 1st encoder to select which of the 16 channels in the P16 bus you wish to select an audio source for.
2. Adjust the 3rd encoder to select a category of audio source to send to the currently selected P16 channel. These categories include:
    - Insert
    - Main (LRC)
    - Mix Bus
    - Matrix
    - Direct Out
    - Monitor
3. Adjust the 4th encoder to select which specific signal path to feed to the currently selected P16 output. Choices include:
    - Off
    - Main L
    - Main R
    - Main C/M
    - Any of the 16 Mix Outputs
    - Any of the 6 matrix outputs
    - Any of the 32 direct outputs
    - Any of the 8 Auxiliary Outputs
    - Any of the FX Direct Outputs
    - Monitor L
    - Monitor R
    - Talkback
4. Tap the 4th encoder to assign the selected output path, completing the process.
5. Adjust the 5th encoder to select the signal tap point for the output assignment. This determines where in the audio signal path the source is "tapped" as it is sent to the P16 output. The available signal tap points include:
    - Input
    - Pre-EQ
    - Pre-Fader
    - Post-Fader
6. Tap the 5th encoder to complete the signal tap point assignment.

7.4.5 Routing Screen: Card Output Tab:

The routing screen's card tab allows the user to patch various signal paths to the physical inputs and outputs of the X-USB card. The X-USB's signal path provides 32 channels of inputs and 32 channels of outputs. The 32 card inputs can be used as alternate sources for the two input fader layers, switchable in banks of 8.

To assign an output path to the option card, perform the following steps:

1. Adjust the 1st encoder to select which 8-channel output path to send to the first 8 outputs of the card. Choices include:
    - Local 1-8
    - Local 9-16
    - AES50-A 1-8
    - AES50-A 9-16
    - AES50-A 17-24
    - AES50-A 25-32
    - AES50-A 33-40
    - AES50-A 41-48
    - AES50-B 1-8
    - AES50-B 9-16
    - AES50-B 17-24
    - AES50-B 25-32
    - AES50-B 33-40
    - AES50-B 41-48
    - Card 1-8
    - Card 9-16
    - Card 17-24
    - Card 25-32
    - Out 1-8
    - Out 9-16
    - P16 1-8
    - P16 9-16
    - Aux 1-6/Mon
2. Tap the 1st encoder to assign the selected output path, completing the process.
3. Repeat the process with encoders 2-4 to select output paths for the other 24 channels of card outputs.

7.4.6 Routing Screen: AES50-A and AES50-B Tabs:

The routing screen's AES50-A and AES50-B tabs allow the user to patch various console output paths to the outputs of the dual AES50 connectors. These AES50 connectors can feed other AES50 equipped devices such as a digital stagebox or standalone multi-track recorder.

The console contains two separate AES50 connectors, an "A" connector and a "B" connector. These dual connectors allow for an increased level of flexibility in networking the console with various AES50 based equipment.

Each of the two AES50 screens contains the same following sets of parameters that can be adjusted. To assign various console signal paths to the AES50 connectors, perform the following steps:

1. Adjust the 1st encoder to select an 8-channel signal path that will be sent to the first 8 channels of the AES50 connectors output. Choices include:
    - Local 1-8
    - Local 9-16
    - AES50-A 1-8
    - AES50-A 9-16
    - AES50-A 17-24
    - AES50-A 25-32
    - AES50-A 33-40
    - AES50-A 41-48
    - AES50-B 1-8
    - AES50-B 9-16
    - AES50-B 17-24
    - AES50-B 25-32
    - AES50-B 33-40
    - AES50-B 41-48
    - Card 1-8
    - Card 9-16
    - Card 17-24
    - Card 25-32
    - Out 1-8
    - Out 9-16
    - P16 1-8
    - P16 9-16
    - Aux 1-6/Mon
2. Tap the 1st encoder to connect the currently selected signal path to the AES50 pathway.
3. Repeat the above process for the other five sets of 8-channel AES50 outputs.

The AES50-B tab works exactly the same as the AES50-A screen, but instead selects sources sent to the output of the console's AES50-B connector.

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7.5 Libraries Screen

The libraries screen allows loading and saving of commonly used setups for the channel inputs, effects processors, and routing scenarios.

The libraries screen contains the following separate tabs:

1. Channel: This tab allows the user to load and save commonly used combinations of the channel DSP effects.
2. Effects: This tab allows the user to load and save commonly used effects processor presets.
3. Routing: This tab allows the user to load and save commonly used signal routings they have set up.

7.5.1 Libraries Screen: Channel Tab

The library screen's channel tab allows you to load and save commonly used combinations of the channel DSP effects. For example, once you have dialed in a combination of equalization and compression that works well for a particular singer, you can save the channel DSP chain as a preset for later recall.

To adjust the various settings on the channel tab, perform the following steps:

1. Adjust the 1st encoder to navigate among which specific elements of the input channel can be recalled when loading an input channel preset. Choices include:
    - Head Amp (Microphone Preamplifier)
    - Configuration
    - Gate
    - Compressor
    - Equalizer
    - Sends
2. Tap the 1st encoder to turn the currently selected element on/off in the recall list.
3. Adjust the 2nd encoder to scroll among a list of input channel presets.
4. Tap the 2nd encoder to load the currently highlighted preset and make it active on the currently selected console channel.
5. Adjust the 3rd encoder to scroll among a list of channel preset slots to save the current state of the currently selected console channel.
6. Tap the 3rd encoder to save the currently selected channel's state, to the currently selected preset slot.
    - When the 3rd encoder is tapped, a preset naming screen appears. Adjust and tap encoders 4-6 to apply a custom name to the preset before saving it, then tap the 6th encoder to complete the save process.
7. Tap the 4th encoder to delete a preset from the currently highlighted preset slot.
8. Tap the 5th encoder to import a preset from an attached USB drive.
    - When the 5th encoder is tapped, an "import preset from USB" screen appears. Adjust the 1st encoder to navigate among the contents of the USB drive, and then tap the 1st encoder to select the currently highlighted preset folder.
    - When the preset file has been imported, tap the 2nd encoder to leave the screen.
9. Tap the 6th encoder to export the currently highlighted preset to an attached USB drive.
    - When the 6th encoder is tapped, an "Export Preset to USB drive appears".
    - Adjust the 1st encoder to scroll among the currently available presets to export, then tap the first encoder to select the currently highlighted preset.
    - Adjust and tap encoders 4-6 to apply a custom name to the preset as it is exported.
    - Tap the 2nd encoder to cancel out of the export operation.

7.5.2 Libraries Screen: Effects Tab

The library screen's effects tab allows you to load and save presets for the various onboard effects processors.

To adjust the various settings on the FX tab, perform the following steps:

1. Adjust the 1st encoder to navigate among which of the eight effects slots to load or save a preset.
    - As you navigate among the eight effects slots, the specific effect processor loaded into each slot will display on the screen as both a name and icon.
2. To save and load presets, as well as import/export them, follow the same procedures as detailed in the Libraries Screen: Channel Tab

7.5.3 Libraries Screen: Routing Tab

The library screen's routing tab allows you to load and save presets of the console's signal routings. This can be useful for repeating specific routing scenarios that occur over and over on a regular basis, such as when using the console for a weekly club gig or worship service.

To adjust the various settings on the routing tab, perform the following steps:

1. Adjust the 1st encoder to navigate among which specific console signal paths will be recalled when loading a routing preset. Choices include:
    - Channel Inputs
    - Analog Out
    - Auxiliary Out
    - P16 (Ultranet) Out
    - Card Out
    - AES50 Out
2. Tap the 1st encoder to turn the currently selected element on/off in the recall list.
3. To save and load presets, as well as import/export them, follow the same procedures as detailed in the Libraries Screen: Channel Tab.

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7.6 Effects Screen

The effects screen controls various aspects of the eight internal effects processors. On this screen, the user can select specific types of effects for the eight internal effects processors, configure their input and output paths, monitor their levels, and adjust the various effects parameters.

The home screen contains the following separate tabs:

1. Home: The home screen provides a general overview for all eight effects processors, displaying what effect has been inserted in each of the eight slots, as well as displaying input/output paths for each slot and the I/O signal levels.
2. FX1-8: These eight duplicate screens display all relevant data for the eight separate effects processors, allowing the user to adjust all parameters for the selected effect.

7.6.1 Effects Screen: Home Tab

The effects screen's home tab provides a high-level overview of the eight effect processor slots, giving the user "at-a-glance" feedback on what effects they have assigned to the slots, the console source and destination for each processor, and the input/output levels for each processor.

To make adjustment on the effects screen's home tab, perform the following steps:

1. Adjust the 1st encoder to select the input source for the currently highlighted effect block. Signal path choices include:
   - Insert Send
   - Mix Bus 1-16
2. Tap the 1st encoder to assign the currently selected input source.
3. Adjust the 2nd encoder to select the input source for the right side of the currently highlighted effect block.
4. Tap the 2nd encoder to assign the currently selected input source.

TIP: To configure an effect as mono input and stereo output, set both input sources to the same signal path.

5. Adjust the 5th encoder to scroll among the different available audio effects. Choices include:

1. Hall Reverb	14. Rotary Speaker	27. Dual Enhancer
2. Plate Reverb	15. Tremolo/Panner	28. Stereo Enhancer
3. Vintage Reverb	16. Delay & Chamber	29. Dual Exciter
4. Vintage Room	17. Chorus & Chamber	30. Stereo Exciter
5. Ambience	18. Flanger & Chamber	31. Stereo Imager
6. Gated Reverb	19. Delay & Chorus	32. Dual Guitar Amp
7. Reverse Reverb	20. Delay & Flanger	33. Stereo Guitar Amp
8. Stereo Delay	21. Dual Graphic EQ	34. Dual Tube Stage
9. 3-tap delay	22. Stereo Graphic EQ	35. Stereo Tube Stage
10. Stereo chorus	23. Dual TruEQ	36. Dual Pitch
11. Stereo Flanger	24. Stereo TruEQ	37. Stereo Pitch
12. Stereo Phaser	25. Wave Designer	38. Dual De-Esser
13. Mood Filter	26. Precision Limiter	39. Stereo De-Esser

6. Tap the 5th encoder to assign the selected effect to the currently highlighted effects slot.
7. Adjust the 6th encoder to scroll among the eight effects slots, to select one for editing.
8. Tap the 6th encoder to go to the edit page for the currently highlighted effects slot.

7.6.2 Effects Screen: FX 1-8 Tabs:

The effect editor tab allows you to edit the parameters for the specific effect processor assigned to the corresponding effects slot.

In order to more closely simulate the look and feel of the outboard processors that are no longer necessary with a digital console, the individual effects processor screen provides a graphical representation of the effect processor's real world physical counterpart. This provides greater ease of use to the user than a simple text list of parameters.

To make adjustment on the FX screen's editing tab, perform the following steps:

1. Adjust the six rotary encoders to change the various effect parameters shown at the bottom of the screen.
2. Use the Layer up/down buttons to switch the rotary encoders to a second set of parameters for effects that contain more than six adjustable parameters total.
3. When the effect processor has been edited to your satisfaction, push the 6th encoder to go back to the FX home tab (or simply resume the mixing duties in general).
4. See the FX Descriptions chapter for details on specific parameters.

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7.7 Setup Screen

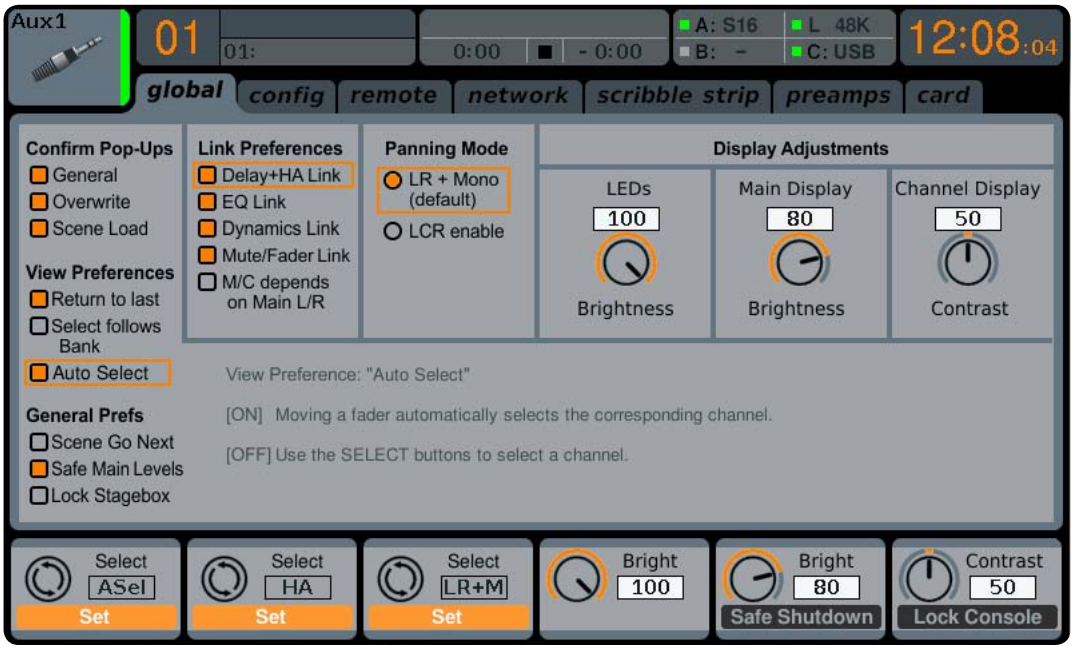
The setup screen offers various controls for global, high-level functions of the console such as display adjustments, sample rates and synchronization, user settings, and network configuration.

The setup screen contains the following separate tabs:

1. Global: This screen offers adjustments for various global preferences of how the console operates.
2. Config: This screen offers adjustments for sample rates and synchronization, as well as configuring high-level settings for signal path buses.
3. Remote: This screen offers different controls for setting up the console as a control surface for various DAW recording software on a connected computer.
4. Network: This screen offers different controls for attaching the console to a standard Ethernet network.
5. DCA Groups: This screen offers controls for various aspects of the console's DCA groups.
6. Card: This screen selects the input/output configurations of the USB interface card.

None of the setup screen's tabs contain a secondary level of encoder functions, so the Layer up/down keys do not need to be used for these screens.

7.7.1 Setup Screen: Global Tab:



The setup screen's global tab allows the user to adjust various global controls of the console, such as display brightness and contrast, the panning mode used by channels, text languages, and more.

To make adjustments in the global screen, perform the following steps:

1. Adjust the first encoder to select various console settings for pop-up messages and assorted preferences.
2. Tap the 1st encoder to turn the currently selected setting on/off.
3. Adjust the 2nd encoder to select settings for linking multiple console channels.
4. Tap the 2nd encoder to turn the currently selected setting on/off.
5. Adjust the 3rd encoder to set the console's panning mode, which affects how channel panning is performed in the stereo field. The two choices are:
   - LR + Mono: This is the default mode of the console. In this mode, channels can be panned between the left and right mix outputs, as well as assigned to the separate mono mix bus. In this mode, the Center/ Mono bus is not affected by from the pan control.
   - LCR enable: In this mode, the signal is panned from Left over Center to Right. This behavior is emulated by the faders on the Main tab, a behavior that is more intuitive than on other consoles. Note that in this mode, the definition of "mono" changes since the setup is no longer mono, but rather a setup consisting of Left-Center-Right.
6. Adjust the 4th encoder to set the brightness of the various LED lights of the console, from a range of 1-100.
7. Adjust the 5th encoder to set the brightness of the color screen (main display), from a range of 1-100. In order to prevent any errors by losing power during a store operation, we recommend using the "Safe Shutdown" function by pressing the 5th encoder, then turning the power switch off.
8. Adjust the 6th encoder to set the brightness of the individual LCD screens (channel display) above each input and output channel, from a range of 1-100.

NOTE: The X32 can be locked against unintended use by pressing the 6th encoder to activate 'Lock Console'. In this state, the UI will not allow any changes to be made and the display shows "X". Keep HOME depressed for about 5 seconds to unlock the X32 again.

7.7.2 Setup Screen: Config Tab:

The setup screen's config tab allows adjustment of various audio-related settings, such as the console's base sample rate and use of an internal or external digital clock. It also offers choices for high-level global settings for how signal path buses operate.

To adjust the various settings of the config tab, perform the following steps:

1. Adjust the 1st encoder to select between Console, Show Data, and Libraries for initialization.
2. Tap the 1st encoder to initialize the console back to its factory state.
    - An "are you sure" message will appear. Use the left Page Select key to cancel out of the operation, or the right key to confirm the operation and initialize the console.
3. The console's current firmware is displayed in the first column of the main color screen.
    - If/when a firmware update is available for the console, the user simply needs to download the new firmware file to the root level of a USB thumb drive, attach the thumb drive to the console, and then reboot. The console will see the firmware file and an update will be done automatically while booting.
4. Adjust the 2nd encoder to select the digital sample rate of the console. Choices include:
    - 48 kHz
    - 44.1 kHz
5. Tap the second encoder to assign the currently selected sample rate.

Tip: Note that the sample rate of the console will be the same sample rate for any audio recorded to the onboard stereo USB recorder, as well as the sample rate output by the AES/EBU connector that may get patched into an outboard recorder. Thus, it is often beneficial to select a sample rate that is appropriate for the medium that recorded audio will eventually be used on.

If the program material being recorded is audio only, with no video component, then it usually makes sense to set a sample rate of 44.1 kHz. This will ensure that any audio recorded is compatible with the 44.1 kHz sample rate of commercial audio CDs.

If the program material being recorded is audio that is meant to accompany video, then it usually makes sense to set a sample rate of 48 kHz. This will ensure that any audio recorded is compatible with the 48 kHz sample rate of the various audio formats used on a video DVD.

6. Adjust the 3rd encoder to set the word clock synchronization of the console to use its internal digital clock, or slave to an external digital clock. Choices for the clock signal include:
    - Internal clock
    - External clock from the AES50-A port
    - External clock from the AES50-B port
    - X-USB card

Note that the graphics at the top of the screen will always display a green led when the console has achieved proper "digital lock", from either its own internal clock or a valid external clock.

7. Tap the 4th encoder to cycle through the different settings for the console's internal date and time settings.
8. Adjust the 4th encoder to set the value for the currently selected date/time setting.
9. Adjust the 5th encoder to select the console's "Bus Pre-Configuration". This settings allows the mix bus outputs to be configured in various combinations of:
    - Pre-fader, variable output auxiliary sends
    - Post-Fader, variable output auxiliary sends
    - Fixed-output sub groups
10. Choices include:
    - 8 pre-fader auxiliary sends, 8 post-fader auxiliary sends, and no sub-groups
    - 8 pre-fader auxiliary sends, 4 post-fader auxiliary sends, and 4 sub-groups
    - 6 pre-fader auxiliary sends, 4 post-fader auxiliary sends, and 6 sub-groups
    - 4 pre-fader auxiliary sends, 4 post-fader auxiliary sends, and 8 sub-groups
    - 10 pre-fader auxiliary sends, 6 post-fader auxiliary sends, and 0 sub-groups
11. Tap the 5th encoder to assign the currently selected configuration.

As the configuration is selected, a display on the right-hand side of the color screen changes to show the currently selected configuration.

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7.7.3 Setup Screen: Remote Tab:

To adjust the various remote settings, perform the following steps:

1. Tap the 1st encoder to enable DAW remote control.
2. Adjust the 2nd encoder to select the specific control surface protocol used, in conjunction with the target DAW software. Choices include:
    - Mackie Control: Use this protocol to control any DAW software that is compatible with a Mackie Control hardware control surface.
    - HUI: Use this protocol to control any D.A.W. software that is compatible with a HUI hardware control surface, such as Pro Tools.
3. Tap the 2nd encoder to assign the currently selected control surface protocol.
4. Adjust the 5th encoder to select whether the remote function uses the MIDI In and OUT jacks or the X-USB card's MIDI.
5. Tap the 5th encoder to confirm the selection.
6. Adjust the 6th encoder to adjust various MIDI-based operations for the console. Choices include:
    - MIDI In/Out: This toggles the MIDI input and outputs for the console on/off.
    - Card MIDI: Allows MIDI transmission through the X-USB card.
    - USB In/Out: This toggles the console's USB ports on/off.
    - RTP (Real-time Transport Protocol): This toggles on/off the console's ability to interface with an Ethernet-based MIDI system.
    - Enable MIDI scene recall: This toggles on/off the console's response to incoming MIDI messages for switching console scenes.
7. Tap the 6th encoder to toggle the currently selected MIDI option on/off. This can be useful if you want to ensure that any connected MIDI transmitters cannot interfere with the console.

7.7.4 Setup Screen: Network Tab:

The setup screen's network tab contains settings used when connecting the console to a standard Ethernet network. The user can set parameters such as using a fixed IP address or having one assigned, as well as setting up the Ethernet and subnet mask settings.

To set the network address for the console, perform the following steps:

1. Adjust the 1st encoder to select which specific network field to adjust. Choices include:
    - IP Address
    - Subnet Mask
    - Gateway
2. Adjust encoders 2, 3, 4, and 5 to set the 4 numerical fields to be adjusted, for the selected network field.
3. Tap the 6th encoder to assign the adjusted settings.

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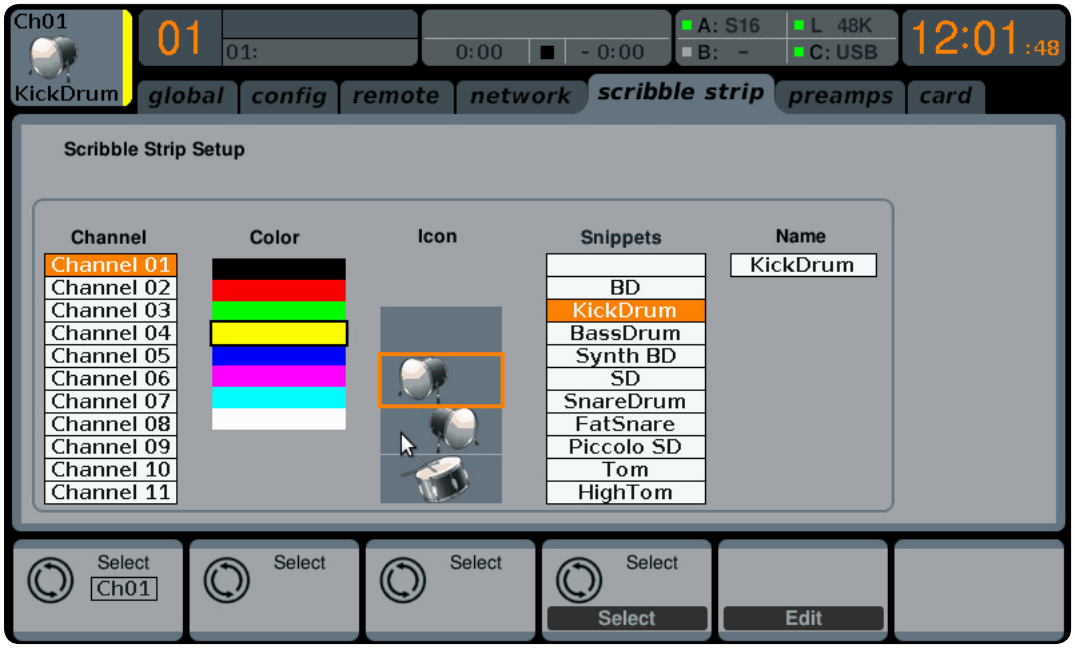
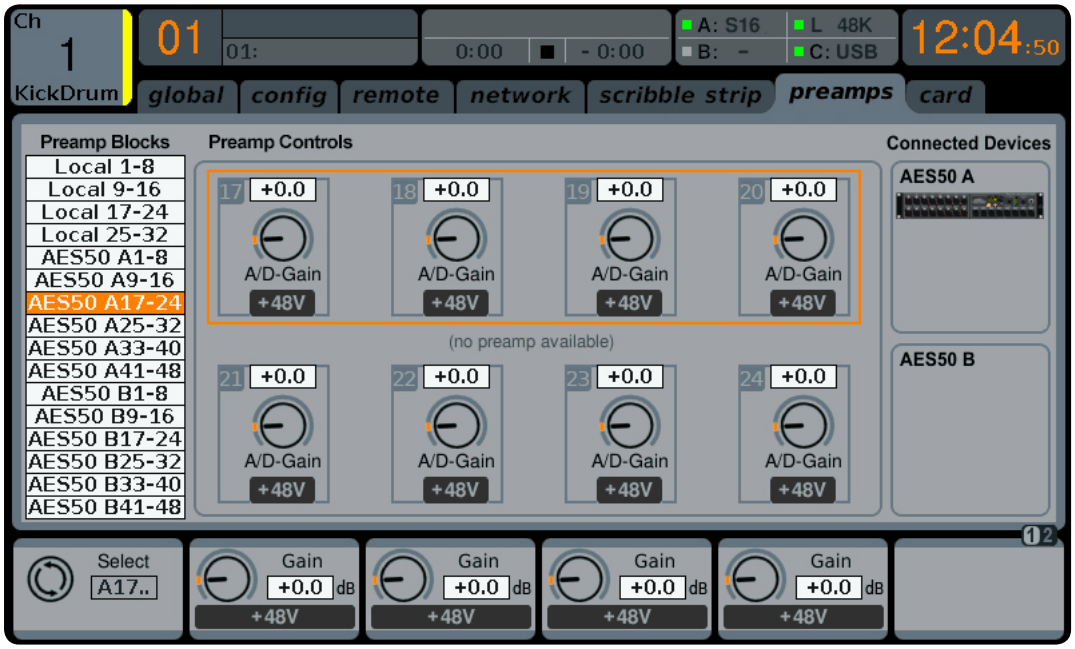
7.7.5 Setup Screen: Scribble Strip Tab





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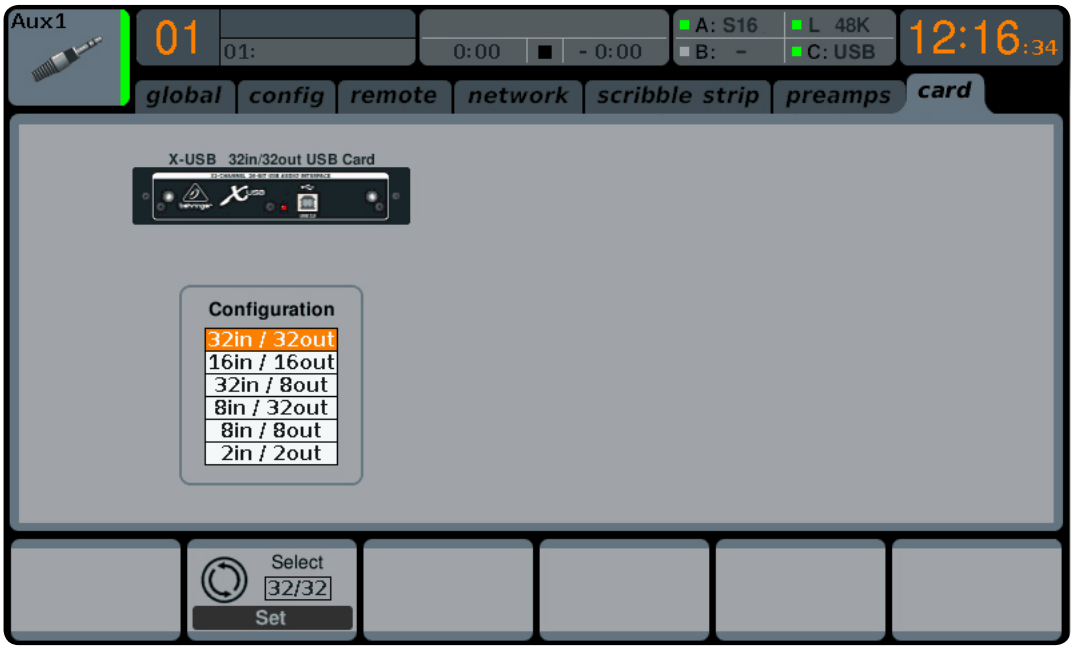

The Scribble Strip tab allows the color, icon and name that appears in the small LCD display of a channel, bus, matrix or DCA group to be adjusted.

1. Adjust the 1st encoder to select the channel, bus, matrix, DCA group, etc. you wish to edit.
2. Adjust the 2nd encoder to set the color for the currently selected channel.
   - The selected color will be shown in the LCD screen above the selected channel's fader. For example, if DCA#5 is assigned the color red, the LCD screen above output fader #5 will illuminate in red.
3. Adjust the 3rd encoder to select the graphical icon for the channel. A large variety of clip-art is available to represent various input sources and output destinations.
4. Adjust the 4th encoder to select a name from a list of common preset names (snippets), for the currently selected channel.
5. Tap the 4th encoder to assign the currently highlighted preset text (snippet) to the channel.
6. Tap the 5th encoder to edit the channel name. An edit screen will pop up.
7. Adjust the 4th encoder to shift the cursor position.
8. Tap the 4th encoder to issue a "backspace" command, deleting the currently highlighted character.
9. Adjust the 5th encoder to select a letter, number, or symbol to enter into the channel's name field.
10. Tap the 5th encoder to insert the currently highlighted letter, number, or symbol into the channel's name field.
11. Adjust the 6th encoder to select whether the text entry choices offer capitals, normal characters, or numbers and symbols.
12. Tap the 6th encoder to exit the editing page, and save the current parameters to the channel.

7.7.6 Setup Screen: Preamps Tab

The Preamps tab allows the digital trim to be adjusted for all local and AES50 channels.

1. Adjust the 1st encoder to select a block of 8 channels.
2. Adjust encoders 2-5 to set the preamp gain for the top or bottom row of inputs.
3. Tap encoders 2-5 to toggle phantom power on and off.

Note - Use the Layer Up and Down buttons to select the top or bottom row of inputs for editing.

7.7.7 Setup Screen: Card Tab

The Card tab allows selection and configuration of the X-USB card. Note that if no card is installed, this tab is not accessible. Specific routing for the card can be adjusted on the Routing: Home and Card Out tabs.

1. Adjust the 2nd encoder to select the configuration that best suits your application. See the USB Interface Operation chapter for more details. Options include:
   - 32 in/32 out
   - 16 in/16 out
   - 32 in/8 out
   - 8 in/32 out
   - 8 in/8 out
   - 2 in/2 out
2. Tap the 2nd encoder to confirm your selection.

7.8 Monitor/Talkback Screens:

The monitor/talkback screen contains the following separate tabs:

Monitor: This screen controls various solo options, dimming, speaker delay, and sources for the control room output.

Talkback A: This screen controls various adjustments for the talkback A path of console.

Talkback B: This screen controls various adjustments for the talkback B path of console.

Oscillator: This screen offers various controls for the onboard oscillator and how it is routed throughout the console.

7.8.1 Monitor/Talkback Screen: Monitor Tab:

The monitor tab controls various console options related to the solo bus, as well as the console's control room outputs. These options include various solo settings, speaker dimming, speaker delay, and selection of sources for the control room output.

To adjust the various settings on the monitor tab, perform the following steps:

1. Adjust the 1st encoder to change the gain of the monitor signal. This digital gain stage occurs as a first preliminary level control, before the top panel's analog-based monitor level control. A display above the encoder shows the currently set gain value in dB.
    - A multi-segment level meter is displayed on the color screen to allow for proper gain staging of the monitor signal.
2. Adjust the 2nd encoder to scroll through the various solo methods available to the console when audio is routed to the solo bus. Available options include:
    - Exclusive (Last): In this mode, pressing another solo button disengages the previous solo.
    - Solo Follows Select: When this method is selected, the audio of the currently selected channel will automatically be sent to the solo bus. Since a user will often select a channel to adjust its dedicated DSP controls, this method is useful because the audio of the channel will now already be feeding the solo bus where it can be monitored with headphones in a live sound environment.
    - Select Follows Solo: When this method is selected, any channel that is soloed will automatically become the currently selected channel.
    - Channel Solo AFL: With this method, the channel and select button do not have any correlation to each other. When a channel's solo button is pressed, its audio is sent to the solo bus in "after-fader listen" mode, reflecting the current level of the channel fader and any channel DSP that has been applied.
    - Mix Bus AFL/PFL: This toggles the AFL/PFL setting for the mix buses when they are soloed (as opposed to the soloing of a single input channel).
    - DCA Group AFL: This puts the contents of a soloed DCA group into after-fader listen mode when the solo button is pressed on a DCA channel.
    - Use Master Fader: This allows the Main Fader/mute button to control the solo/mon output.
3. Tap the 2nd encoder to select and assign the currently chosen solo option.
4. Adjust the 3rd encoder to adjust the amount of digital delay that is applied to the control room signal path. The display on the screen will show the current amount of delay in feet, meters, and milliseconds.
5. Tap the 3rd encoder to toggle the delay function on/off.

TIP: The delay function is useful for aligning the sound of audio monitored through headphones or speakers used at the Front-of-House position with audio that is coming from the stage location.

By delaying the control room audio, it can be brought into alignment with the slightly delayed audio that has to travel from the stage to the Front of House position.

6. Adjust the 4th encoder to set the amount of volume reduction that occurs when the control room bus has its "dim" function enabled. The amount of volume reduction ranges from -40 dB to 0 dB (no change).
7. Tap the 4th encoder to toggle the dim function on/off.
8. Adjust the 5th encoder to adjust the volume trim for the source currently feeding the control room bus, allowing it to be level/matched with other sources. The amount of trim can be adjusted from -20 dB to +20 dB.
9. Tap the 5th encoder to toggle the control room between mono and stereo operation. This is very useful in a studio context for checking how a mix sounds when played back on a mono speaker such as a clock radio.
10. Adjust the 6th encoder to select what specific signal source to monitor in the control room bus. Choices include:
    - Off (No source)
    - LR Bus
    - LR + C/M
    - LR PFL (pre-fader listen solo bus)
    - LR AFL (after-fader listen solo bus)
    - Auxiliary returns 5/6
    - Auxiliary returns 7/8
11. Tap the 6th encoder to activate the signal source that has been chosen.

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7.8.2 Monitor/Talkback Screen: Talkback Tabs:

The talkback tabs offer various adjustments for the talkback paths of the console, such as destination of the talkback signal and more.

To adjust the various settings on the Talkback A tab, perform the following steps:

1. The screen displays a multi-segment level meter showing the signal strength of the talkback signal as it has currently been set. It also displays a multi-segment gain reduction meter, showing the user how much compression has been automatically applied to the talkback signal to keep its level even to the recipient.
2. Tap the 1st encoder to enable the talkback circuit. The talkback microphone will now transmit audio to the Talkback A path's assigned destination.
3. Adjust the 3rd encoder to set the gain of the talkback A signal. This is an additional gain stage that follows the initial gain stage set by the top panel Talk Level knob.
4. Tap the 3rd encoder to toggle on/off the talkback circuit's "auto-dim" function. This function is useful in a studio setting, and will automatically dim the control room outputs when the talkback circuit is active. This prevents a feedback loop from occurring between the talkback microphone and the nearby studio monitors.
5. Adjust the 4th encoder to scroll through the various talkback destinations, which include:
    - Mix Bus 1-16
    - LR Bus
    - Center/Mono Bus
6. Tap the 4th encoder to activate any talkback destination when it is currently selected. Multiple talkback destinations can be selected, allowing the talkback signal to reach many destinations at the same time.
7. Tap the 5th encoder to toggle the dedicated top-panel talkback buttons between latching and non-latching operation.
8. Adjust the 6th encoder to adjust the brightness of the lamp that is connected to the console's top-panel lamp connector.
9. Tap the 6th encoder to toggle the attached lamp on/off.

All controls for the talkback B tab work as described above, but pertain to the talkback B signal path.

7.8.3 Monitor/Talkback Screen: Oscillator Tab:

The oscillator tab offers controls for the console's onboard oscillator, a very handy tool that can be used for setting up PA systems and testing various signal flow paths without the need for a live source feeding a microphone. Settings include oscillator type, frequency, volume, and routing destinations.

To adjust the various settings on the Oscillator tab, perform the following steps:

1. Adjust the 1st encoder to set the level of the onboard oscillator.
2. Tap the 1st encoder to toggle the onboard oscillator on/off.
    - The color screen displays a multi-segment level meter that show the current level of the oscillator.
3. Adjust the 2nd encoder to set the frequency of the primary onboard oscillator.
4. Adjust the 3rd encoder to set the frequency of the alternate onboard oscillator.
5. Tap the 3rd encoder to alternate between the 2 onboard oscillators.
6. Adjust the 4th encoder to select the type of oscillator to be used. Choices include:
    - Sine Wave
    - Pink Noise
    - White Noise
7. Tap the 4th encoder to engage the selected oscillator type.
8. Adjust the 6th encoder to select a destination for the onboard oscillator. Choices include:
    - Mix Bus 1-16
    - Main L Bus
    - Main R Bus
    - Main L+R Bus
    - Main Center/Mono
    - Matrix Outputs 1-6
9. Tap the 6th encoder to assign the selected oscillator destination.

7.9 Scenes Screen

The scenes screen allows setup for saving and recalling different memory scenes of the console. The comprehensive recallability of the console (including gain settings for the digitally controlled mic preamps) is one of the most powerful aspects of the console.

The scenes screen contains the following separate tabs:

Home: This screen contains a general overview of the scenes contained in the console, along with their custom names and what parameters are included in each scene.

MIDI: This screen allows the console to associate different scenes with incoming and outgoing MIDI messages, allowing the console's scene changes to control or be controlled by external MIDI equipment.

Parameter Safe: This screen configures which console parameters are and are not saved/switched with the console scenes.

Channel Safe: This screen configures which console channels are and are not changed when a console scene change occurs.

7.9.1 Scenes Screen: Home Tab

The scenes screen's home tab shows a general overview of the scenes that have been configured in the console, along with their custom names and what parameters are included in each scene.

For a setting where scenes are used heavily and are very critical (such as a theater performance), this would be a good screen to leave on at all times so that the console operator can be completely sure, at all times, what scene the console currently resides on and what scene will come up next when the "Go" button is pressed.

To adjust the various settings on the home tab, perform the following steps:

1. Rotate the 1st encoder to scroll among the available scenes in the scenes list, which is displayed on the left side of the color screen.
2. Tap the 1st encoder to "go" to the currently selected scene in the list, switching the console to the state it was in when that scene was stored
3. Rotate the 2nd encoder to select a scene in the list to be "skipped" when cycling through scenes using the Prev and Next buttons.
4. Tap the 2nd encoder to complete the "skip" command on the currently selected scene. That scene will now be skipped when scrolling through the list.
5. Rotate the 3rd encoder to scroll back through recent changes.
6. Tap the 3rd encoder to undo the recent change.
7. Rotate the 4th encoder to select a slot to save a new scene.
8. Tap the 4th encoder to complete the save operation. The console's current state will be overwritten on the scene number that was selected with the encoder.
9. Rotate the 6th encoder to select which aspects of the console's routing are made "safe" from a scene change, and will be unaffected by any scene changes that occur. Routing choices that can be safed include:
    - Routing
    - Output Patch
    - Mic Preamp Gain (HA, short for head-amplifier)
    - Configuration
    - Channel Processing
    - Mix Buses
    - Effects
    - Talkback
10. Tap the 6th encoder to select any of the above choices as the encoder rotation is used to select them. Multiple categories can be selected at the same time.

7.9.2 Scenes Screen: MIDI Tab

This MIDI tab of the scenes screen allows the console to associate different scenes with outgoing MIDI messages, allowing the console's scene changes to control by external MIDI equipment.

For instance, the user could configure the console to issue a MIDI program change message as each new scene is recalled, with the outgoing MIDI message triggering a new scene of a MIDI-equipped lighting controller.

Note - Scenes can be recalled via MIDI using simple Program Change 1-100 commands, provided that MIDI Scene Recall is generally enabled on the Setup/Remote page.

To adjust the various settings on the MIDI tab, perform the following steps:

1. Rotate the 1st encoder to select a scene to edit.
2. Tap the 2nd encoder to "safe" the console from any incoming MIDI messages, preventing the console from switching scenes in response to MIDI data.
3. Rotate the 3rd encoder to select what type of MIDI event is transmitted by the console when a scene change is issued. The choices include:
    - Off (No MIDI event)
    - MIDI program change
    - MIDI control change
    - Note
4. Encoders 4, 5 and 6 adjust the channel, number, and velocity (if applicable).

The color screen displays the MIDI data associated with the currently selected scene.

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7.9.3 Scenes Screen: Parameter Safe Tab

The scenes screen's "parameter safe" tab configures which console parameters are and are not saved/switched with the console scenes. This is very useful when the operator has certain parameters that they wish to remain in control of, and would never want to have altered during a scene change, for example, the mic pre gains on the input channels.

To adjust the various settings on the Parameter Safe tab, perform the following steps:

1. Rotate any of the first 4 encoders to navigate among the checkboxes in the color screen, which represent various console areas that can be isolated from scene changes.
2. Tap any of the first 4 encoders to select the console areas that have been selected with the encoders. In each of the four columns, multiple console areas can be selected and isolated from scene changes.

The following areas of the console can be isolated from scene changes, and are divided up into 4 columns on the color screen:

Column 1: Input Channels

- HA (Head Amp/Microphone Preamp)
- Configuration
- Channel Equalizer
- Channel Gate/Compressor
- Channel Insert
- Channel Groups
- Fader, Pan, Mute, Mix Ons

Column 2: Input Channels

- Mix sends 1-16

Column 3: Mix Buses

- Mix sends 1-16
- Configuration
- Equalizer
- Compressor
- Insert
- Groups
- Fader, Pan, Mute, Matrix Ons

Column 4: Console

- Configuration
- Solo
- Routing
- Output Patch

7.9.4 Scenes Screen: Channel Safe Tab

The scenes screen's "channel safe" tab configures which console channels are and are not changed when a console scene change occurs. This allows the user to "protect" certain channels from ever changing during a scene change, giving them as much control as possible for key audio sources.

For example, in a theater context, the console operator may have dialed in just the right EQ and compressor settings and channel volume for the voice of the lead actor, and does not wish to have them altered when the console changes scenes and alters various parameters.

To adjust the various settings on the Channel Safe tab, perform the following steps:

1. Rotate any of the 6 encoders to navigate among the check boxes in the color screen, which represent various groups of channels that can be isolated from scene changes.
2. Tap any of the 6 encoders to select the console areas that have been highlighted with the encoders. In each of the 6 columns, multiple console areas can be selected and isolated from scene changes.

The following areas of the console can be isolated from scene changes, and are divided up into six columns on the color screen:

Column 1: Channels

- Input Channels 1-16

Column 2: Channels

- Input Channels 17-32

Column 3: Buses

- Aux 1-8
- FX 1L through 4R

Column 4: Returns

- Mix 1-16

Column 5: Main/Matrix/Groups

- Matrix 1-6
- LR Bus
- Center/Mono Bus
- DCA groups 1-8

Column 6: Effects Slots

- FX 1-8

7.10 Mute Group Screen

The mute group screen allows for quick assignment and control of the console's 6 mute groups, and offers two separate functions:

1. It mutes the active screen during the process of assigning channels to mute groups. This ensures that no channels are accidentally muted during the assignment process during a live performance.
2. It offers an additional interface for muting/unmuting the mute groups in addition to the dedicated mute group buttons at the bottom of the console.

When activated, the mute screen only covers the bottom portion of the main display, allowing the middle portion to continue displaying its usual screen content.

Note - Channels must be assigned to a Mute Group via iPad or PC.

To use the mute groups screen to mute/unmute the groups, perform the following steps:

1. Tap any of the six encoders to mute the corresponding group, and thus mute all channels that are assigned to that mute group.
2. Tap the encoder of a currently muted group to "un-mute" the mute group.
3. When finished working with mute groups, tap the Mute Group screen button to exit the mute groups screen. The entire screen will again display its full set of controls for whatever page it was previously on.

7.11 Utility Screen

The utility screen is a supplemental screen designed to work in conjunction with the other screens that may be in view at any particular moment. The utility screen is never seen by itself, it always exists in the context of another screen.

To reinforce this point, when the utility screen button is pressed, it illuminates at the same time that another screen button is also illuminated, showing you which screen it is providing extra utilities for. For most screens, pressing the utility button simply acts as a shortcut to a page that can be navigated to by other means. In a few cases, a utility page provides extra utility functions not seen anywhere else.

The utility button works in the following manner with the other screens on the console:

Channel Preamp Screen:

USB Screen: Takes the user directly to the "select folder" tab of the USB screen.

Monitor/Talkback Screens: There are no utility functions for any of the different pages of the monitor screen.

Scenes Page: Provides an interface for copying, pasting, loading, and saving different scenes in the scene list. Adjust and tap the six rotary encoders to perform these functions.

Custom Screen: There are no utility functions for any of the different pages of the custom screen.

Meters Screen: There are no utility functions for any of the different pages of the meters screen.

Routing Screen: Takes the user directly to the routing tab of the library screen.

Setup Screen: There are no utility functions for any of the different pages of the setup screen.

Library Screen: There are no utility functions for any of the different pages of the library screen.

Effects Screen: Takes the user directly to the effects tab of the library screen.

All other pages: Takes the user directly to the channel tab of the library screen.

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7.12 USB Screen

The USB screen controls various aspects of the console's onboard audio file player/recorder, allowing the user to record stereo audio to an attached USB drive, as well as playback audio files from the drive through the console.

The USB screen contains the following separate tabs:

Home: This screen provides a general overview of the USB record/playback interface.

Config: This screen allows configuration of the various parameters associated with recording to and playback from the USB drive, such as audio paths, record folders, etc.

7.12.1 USB Screen: Home Tab:

The USB screen's home tab provides a general overview of the recording/playback process for audio files residing on the attached USB drive. It offers a basic set of transport controls, as well as metering and a list of files available for playback.

To adjust the various settings on the USB screen's home tab, perform the following steps:

1. Tap the 1st encoder to stop playback of the audio file.
2. Tap the 2nd encoder to play back audio from the currently loaded audio file.
3. Tap the 3rd encoder to rewind the audio.
4. Tap the 4th encoder to fast forward the audio.
5. Tap the 5th encoder to record audio from the currently configured audio path, to the attached USB drive.
6. Rotate the 6th encoder to select an audio track from the currently attached USB drive.
7. Tap the 6th encoder to begin playback of the selected audio file.

A list of available audio files is displayed on the right hand side of the screen. When the currently loaded track finishes playback, the next track in the list will begin playback. This allows assorted audio tracks on the USB drive to be played back in sequence and used as "break music" during a break in the band's set.

The USB screen's home tab also contains the following helpful displays:

- Stereo meter displays for the recorder input level
- Stereo output meters for the playback level of the file currently playing back
- A list of available tracks on the attached USB drive

7.12.2 USB Screen: Configuration Tab

The configuration tab allows setting up all aspects of the stereo recorder. In this screen, one can select audio paths to feed to the recorder and adjust the level of incoming audio.

To adjust the various settings on the USB screen's configuration tab, perform the following steps:

1. Tap the 1st encoder to select a folder to save the recorded audio files to.
    - A pop-up window appears, displaying all available folders on the attached drive.
    - Rotate the first encoder to select an available folder.
    - Tap the first encoder to select the currently highlighted folder.
    - Tap the 2nd encoder to select the folder and return to the main interface.
2. Rotate the 2nd encoder to adjust the input trim for the currently selected channel of the stereo recorder. A stereo input meter on the left side of the screen shows the current input level.
3. Tap the 2nd encoder to select the left or right input of the stereo recorder for further configuration.
4. Rotate the 3rd encoder to select the category of input to feed to the currently selected channel of the stereo recorder. Choices include:
    - Main (LRC)
    - Mix Bus
    - Matrix
    - Direct Out
    - Monitor

5. Rotate the 4th encoder to select the specific signal source to feed the currently selected channel of the stereo recorder. Choices include:
    - Main L
    - Main R
    - Main C/M
    - Any of the 16 Mix Bus Outputs
    - Any of the 6 matrix outputs
    - Any of the 32 direct outputs
    - Direct Outputs Aux 1-8
    - Any of the FX Direct Outputs
    - Monitor L
    - Monitor R
    - Talkback
6. Rotate the 5th encoder to select the signal tap point that the selected audio path is tapped from when feeding currently selected channel of the stereo recorder. Choices include:
    - Pre EQ
    - Post EQ
    - Pre-Fader
    - Post-Fader
7. Tap the 6th encoder to toggle the “playback folder” mode on/off.
    - When playback folder mode is OFF, the transport will stop after playing the currently selected audio file. This is useful for situations like triggering audio cues or sound effects in a theatrical setting.
    - When playback folder mode is ON, the transport will continue playing back all audio files residing in the currently selected folder one by one. This is useful for playing back several songs during a break in the main set, allowing the attached USB drive to act as a source for “break music”.

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8. Specifications

Processing	
Number of processing channels	32 input channels, 8 aux channels, 8 FX return channels, 16 aux buses, 6 matrices, main LRC
Internal effects engines, true stereo / mono	8 / 16
Internal total recall scenes (incl. preamp and fader)	100
Signal processing	40-bit floating point
A/D-D/A conversion (Cirrus Logic A/D CS5368, D/A CS4385)	24-bit @ 44.1 / 48 kHz, 114 dB dynamic range
Local I/O latency (local in > console processing* > local out)	0.8 ms
Network I/O latency (stagebox in > console processing* > stagebox out)	1.1 ms
Connectors	
XLR inputs, programmable mic preamps, designed by MIDAS	16
Talkback mic input, XLR	1 external (no internal mic)
RCA inputs/outputs	2/2
XLR outputs	8
Monitoring outputs ¼" TRS balanced	2
Aux inputs/outputs, ¼" TRS balanced	6/6
Phones outputs, ¼" TRS	1 stereo (front panel)
AES50 ports, SuperMAC	2
Expansion card slot	32 channel audio input/output, various standards
P-16 connector, Ultranet (no power supplied)	1
MIDI inputs / outputs	1/1
Ethernet, RJ45, rear panel, for remote control	1
USB Type A, front panel, for audio and data export/import	1
Mic Input Characteristics	
Preamp design	MIDAS
THD + noise, 20 dB gain, 0 dBu out	< 0.006% A-weighted
Input impedance XLR jack, unbal. / bal.	5 kΩ / 10 kΩ
Non clip maximum input level, XLR	+23 dBu
Phantom power, switchable per input	48 V
Equivalent input noise level, XLR (input shorted)	-128 dBu
CMRR, XLR, @ 20 dB gain (typical)	> 70 dB
CMRR, XLR, @ 40 dB gain	> 80 dB

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Input/Output Characteristics	
Frequency range, @ 48 kHz sample rate, 0 dB to -1 dB	10 Hz - 22 kHz
Dynamic range, analog in to analog out (typical)	106 dB
A/D dynamic range, preamp to converter (typical)	109 dB
D/A dynamic range, converter and output	108 dB
Cross talk rejection @ 1 kHz, adjacent channels	100 dB
Output level, XLR, nom./max.	+4 dBu / +21 dBu
Output impedance, XLR, unbal. / bal.	75 Ω / 75 Ω
Input impedance TRS jack, unbal. / bal.	20 kΩ / 40 kΩ
Non clip maximum input level, TRS	+16 dBu
Nominal output level, TRS	+4 dBu / +16 dBu
Output impedance, TRS, unbal. / bal.	150 Ω / 300 Ω
Phones output impedance / level	40 Ω / +25 dBm (stereo)
Residual noise level, XLR and TRS	-87 dBu A-weighted
Display	
Main screen	5", 800 x 480, 262k color TFT
Main meter	18-segment (-45 dB to clip)
Power	
Switch-mode power supply	Autorange 100-240 V (50/60 Hz)
Power consumption	60 W
Physical	
Standard operating temperature range	5°C – 40°C (41°F – 104°F)
Dimensions	132 x 483 x 287 mm (5.2 x 19 x 11.3")
Weight	6.5 kg (14.4 lbs)

*including all channel and bus processing, excluding insert effects and line delays

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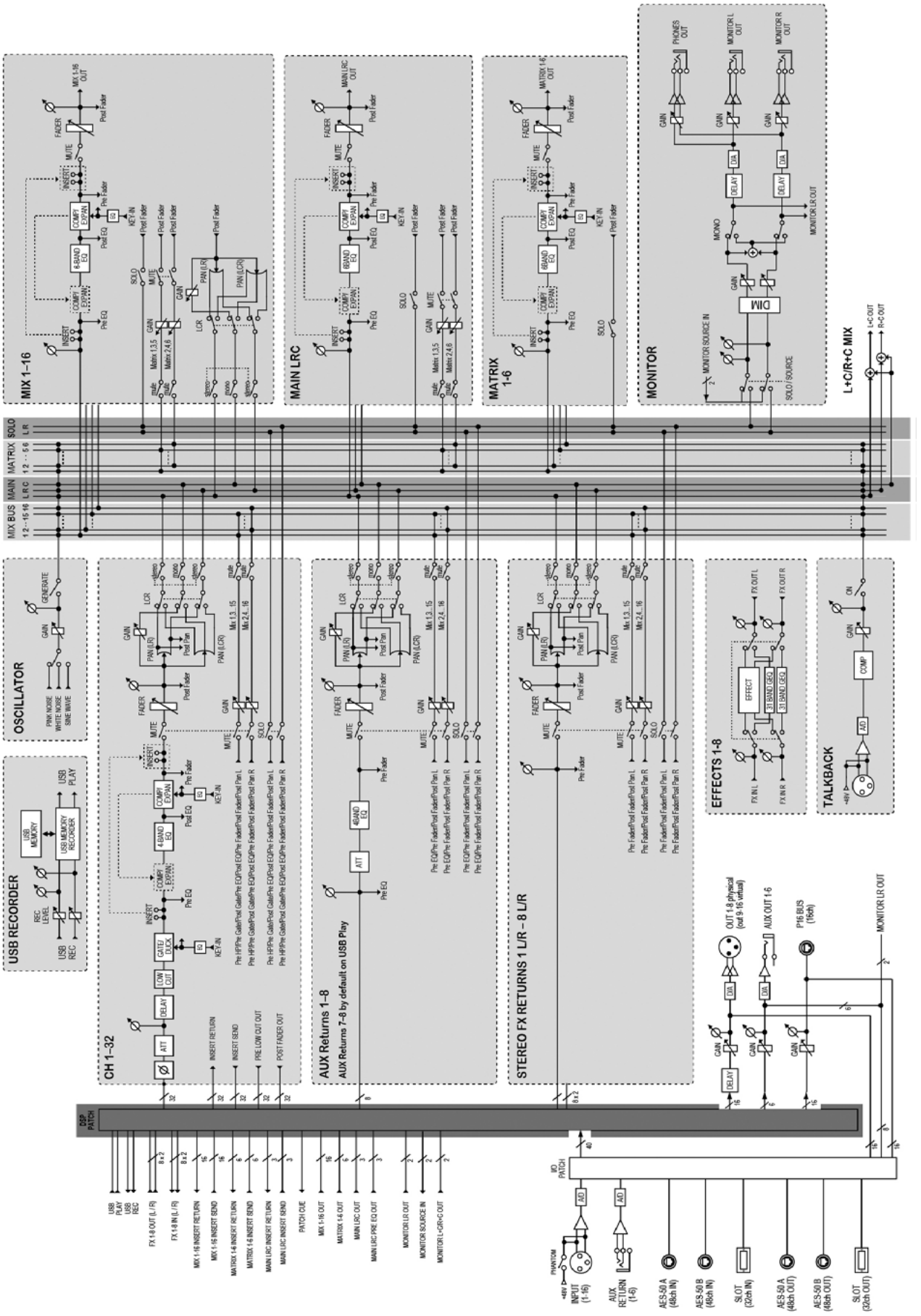
Block Diagram



X32 MIDI Implementation

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MIDI RX > SCENES

Whenever program change messages in the range 1-100 are received on MIDI CH01, the corresponding scene of the X32 internal show memory will be loaded.

This requires the following preconditions:

- Setup / remote

  > MIDI In/Out check marks must be set according to the connection on which MIDI input will be accepted (via physical MIDI connectors on X32 or S16, or via XUF Card)
  > MIDI In/Out check mark must be set for "Enable MIDI Scene Recall"

- Setup / global

  > when tick mark "Confirm Pop-Ups" / "Scene Load" is active, also MIDI scene recalls will only become active after manual confirmation
  > if you prefer activating scenes via MIDI program changes immediately, un-check the "Confirm Pop-Ups" / "Scene Load" tick mark

- Scenes View / home

  > valid scenes must be stored in the internal X32 show file. It is not possible to recall empty scenes.
  > the scope of changes applied by a MIDI scene recall depends on the Scene Safes, Parameter Safes and Channel Safes settings, same as with recalling the scene locally.

MIDI TX > SCENES

Every scene can be assigned one specific MIDI command/event. Each time the scene is loaded the MIDI command will be sent out once. Possible choices for MIDI commands/events to be found on Scenes View/MIDI page:

- Off > no message will be sent upon scene load
- Program Change > select the MIDI Channel and the Program Number (using knobs 4/5 at the main display)
- Control Change > select the MIDI Channel, Controller number and value (using knobs 4-6 at the main display)
- Note > select the MIDI Channel, Note number and velocity (using knobs 4-6 at the main display) > will send out a Note On command directly followed by the same Note Off command

MIDI RX > ASSIGN

Whenever assignable controls are set up for transmitting MIDI commands, reception of that same command (status or continuous) will be reflected on the respective assignable control element (button light, encoder LED collar).

MIDI TX > ASSIGN

We restricted the user assignable MIDI commands to some generic elements, in order to keep things simple enough:

- **Encoders 1-4** > can be assigned to sending control changes, program changes or notes

  > parameters are currently 'Channel' and 'Value'
  > for CC and Note commands 'Value' = controller number/note number, and the encoder rotation determines the controller value/note-on velocity
  > for Program Changes only the channel is specified, and the encoder rotation determines the program number

- **Buttons 5-12** > can be operated in two modes, '**MIDI Push**' (non-latching) for momentary commands, or '**MIDI Toggle**' (latching) for static commands

  MIDI Push:

  > can be assigned to sending control changes, program changes or notes
  > parameters are currently 'Channel' and 'Value'
  > for CC and Note commands 'Value' 0...127 = controller number/note number, and the button momentarily toggles the controller value/note-on velocity to 127 (depressed)à0 (released]
  > for Program Changes 'Value' 0...127 = program/preset number, that will be sent upon pressing the button

  MIDI Toggle:

  > can be assigned to sending control changes or notes
  > parameters are currently 'Channel' and 'Value'
  > for CC and Note commands 'Value' 0...127 = controller number/note number, and the button toggles the controller value/note-on velocity between value/velocity 127 and 0 with every operation

- n.b.1) The ASSIGN section also reflects/displays reception of the same MIDI commands that are selected for transmission
- n.b.2) The MIDI commands assigned to the ASSIGN controls can be transferred to and from stage via AES50 using the S16 stage box MIDI I/O

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MIDI RX/TX > REMOTE

Enables a specific form of bi-directional MIDI communication for remote controlling a computer DAW application using control elements of the X32 console. REMOTE can be used in 3 modes, **Mackie Control, HU**I and raw **MIDI CC (raw)** controllers (see Setup/remote)

- **MIDI CC (raw)** selected and Remote is enabled+active, the group section buttons

  > will emit the following messages on Channel 01:
  Group 1-8 SELECT = Note 64-71, on(127)/off(0), push non-latching
  Group 1-8 SOLO = CC 32-39, on(127)/off(0), toggle latching
  Group 1-8 MUTE = CC 40-47, on(127)/off(0), toggle latching
  Sends On Fader = CC 48, on(127)/off(0), toggle latching
  Group DCA 1-8 = Note 72, on(127)/off(0), push non-latching
  BUS 1-8 = Note 73, on(127)/off(0), push non-latching
  BUS 9-16 = Note 74, on(127)/off(0), push non-latching
  MTX 1-6 = Note 75, on(127)/off(0), push non-latching
  MIDI CC (raw) selected and Remote is enabled+active, then group section faders 1-8
  > will emit CC #0-7, value 0…127 messages on Channel 01

- **HUI** selected and Remote is enabled+active, then the group fader section and buttons will emulate the HUI control surface protocol, i.e. for ProTools.

  > SELECT/SOLO 1-8 buttons will select or solo the corresponding track in the DAW, in banks of 8 tracks
  > Sends On Fader = enables touch-writing a fader automation on selected track, track automation mode in DAW must be 'touch', (latching)
  > use the layer buttons to determine the function assigned to the MUTE 1-8 buttons, the LED displays indicate that function

  - Group DCA 1-8 = allows to move the bank selection of tracks in a DAW, (push non-latching)
  - BUS 1-8 = allows to set DAW tracks to 'Record Ready', (push non-latching)
  - BUS 9-16 = enables using the MUTE buttons for track mute in the DAW, (latching)
  - MTX 1-6 = enables using the MUTE buttons for transport controls in the DAW, (latching)

- **MACKIE CTRL** selected and Remote is enabled+active, then the group fader section and buttons will emulate the Mackie Control Universal protocol

  > SELECT/SOLO 1-8 buttons will select or solo the corresponding track in the DAW, in banks of 8 tracks
  > Sends On Fader = enables touch-writing a fader automation on selected track, track automation mode in DAW must be 'touch' or 'latch', (latching)
  > use the layer buttons to determine the function assigned to the MUTE 1-8 buttons, the LED displays indicate that function

  - Group DCA 1-8 = allows to move the bank selection of tracks in a DAW, (push non-latching)
  - BUS 1-8 = allows to set DAW tracks to 'Record Ready', (push non-latching)
  - BUS 9-16 = enables using the MUTE buttons for track mute in the DAW, (latching)
  - MTX 1-6 = enables using the MUTE buttons for transport controls in the DAW, (latching)

Dimensions

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FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

BEHRINGER

X32 RACK DIGITAL MIXER

Responsible Party Name:	**MUSIC Group Services US Inc.**
Address:	**18912 North Creek Parkway, Suite 200 Bothell, WA 98011, USA**
Phone Number:	**+1 425 672 0816**

X32 RACK DIGITAL MIXER

complies with the FCC rules as mentioned in the following paragraph:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Important information:

Changes or modifications to the equipment not expressly approved by MUSIC Group can void the user's authority to use the equipment.

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